JUNE | 1956

products finishing

FINISHES ON METAL PRODUCTS

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PRODUCTS FINISHING

HIGHLY SKILLED

in the Compounding of Abrasives

for

Polishing • Buffing • Burring
Satin Finishing •
Lapping

. . . a skill that manifests itself in two important services: one, in a line of abrasive compounds—both solid and liquid—that are recognized all over the world as industry's STANDARDS; and, two, in a broad technical finishing service on call at any time by those who feel they are not getting the best and most economical finishing results.

Lea Abrasive Compositions . . . have quality! . . . have variety! . . . have uniformity! Headed by industry's leading greaseless composition, LEA COMPOUND, we can supply the following, among others, all in a wide range:

★**LEAROK** . . . a 'no free grease' packless, buffing compound, assuring clean operations particularly on articles with contoured surfaces or crevices.

★**LEA LIQUABRADE** . . . liquid, non-flammable, buffing compound, particularly popular where automatic high production-line work is carried on. Used with Lea Spray Buffing System.

★**LEABRAMENT** . . . liquid abrasive composition for wheels and belts; contains coarse grains. Can be brushed on.

★**LEA PLASTI-BRADE** . . . liquid abrasive composition containing the finer grains. Can be sprayed or brushed on.

★**LEA LAPPING PASTE** . . . exceptionally fine grain pastes for precision work; grains in sub-micron sizes carefully graded.

If you are interested in obtaining better finishing and/or lower costs, do two things: one, call on the LEA Technical Service; two, specify LEA as the source for the finishing compositions. In LEA Products you will get maximum values from quality abrasives properly graded.

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Lea Mfg. Company of England, Ltd., Buxton, England
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Manufacturing Plant: 237 East Aurora St., Waterbury 20, Conn.

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3	17	31	45	59	73	87	101	115	129	143	157	170	183	196	209	222	235	248	261
4	18	32	46	60	74	88	102	116	130	144	158	171	184	197	210	223	236	249	262
5	19	33	47	61	75	89	103	117	131	145	159	172	185	198	211	224	237	250	263
6	20	34	48	62	76	90	104	118	132	146	160	173	186	199	212	225	238	251	264
7	21	35	49	63	77	91	105	119	133	147	161	174	187	200	213	226	239	252	265
8	22	36	50	64	78	92	106	120	134	148	162	175	188	201	214	227	240	253	266
9	23	37	51	65	79	93	107	121	135	149	163	176	189	202	215	228	241	254	267
10	24	38	52	66	80	94	108	122	136	150	164	177	190	203	216	229	242	255	268
11	25	39	53	67	81	95	109	123	137	151	165	178	191	204	217	230	243	256	269
12	26	40	54	68	82	96	110	124	138	152	166	179	192	205	218	231	244	257	270
13	27	41	55	69	83	97	111	125	139	153	167	180	193	206	219	232	245	258	271
14	28	42	56	70	84	98	112	126	140	154	168	181	194	207	220	233	246	259	272

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4	18	32	46	60	74	88	102	116	130	144	158	171	184	197	210	223	236	249	262
5	19	33	47	61	75	89	103	117	131	145	159	172	185	198	211	224	237	250	263
6	20	34	48	62	76	90	104	118	132	146	160	173	186	199	212	225	238	251	264
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9	23	37	51	65	79	93	107	121	135	149	163	176	189	202	215	228	241	254	267
10	24	38	52	66	80	94	108	122	136	150	164	177	190	203	216	229	242	255	268
11	25	39	53	67	81	95	109	123	137	151	165	178	191	204	217	230	243	256	269
12	26	40	54	68	82	96	110	124	138	152	166	179	192	205	218	231	244	257	270
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NEW OAKITE CLEANERS GIVE YOU MORE FOR YOUR PAINT-PREPARATION DOLLAR

When you prepare metal for painting, does your trouble chart show that you need better cleaners, strippers and surface conditioners? Do you have these difficulties:

☐ Streaky discolorations or powdery residues cling to surface of steel parts being stripped for repainting. See **1** below.

☐ Zinc phosphating process too difficult to control . . . Iron phosphating process doesn't show good results in salt spray tests. See **2.**

☐ Too many operations—cleaning, pickling, neutralizing, etc.—are needed to prepare steel that does not require phosphating before painting. See **3.**

Here are brief descriptions of new Oakite materials designed to end these pre-paint metal-cleaning troubles:

1 For stripping pigmented paint, phosphate coatings and undercoat rust in one operation, try Oakite Rustripper.

2 For a zinc phosphating process that is truly easy to control, try new Oakite CrysCoat SW . . . For better salt spray results try CrysCoat No. 89.

3 For one-operation removal of rust, heat scale, welding residues and light soil together with good preparation for painting, try Oakite Compound No. 131. Inhibited against attack on steel.

FREE Check the coupon and we will send you free booklets or bulletins with full information on new Oakite cleaners.

OAKITE PRODUCTS, INC.
20 Rector Street, New York 6, N. Y.

Send me free booklets or bulletins giving complete information on the new Oakite materials checked below:

☐ Oakite Rustripper ☐ Oakite CrysCoat No. 89
☐ Oakite CrysCoat SW ☐ Oakite Compound No. 131

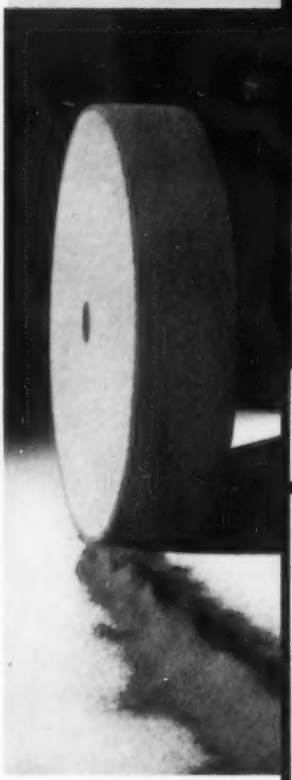
NAME _____

COMPANY _____

ADDRESS _____

For more data circle **138** on Reader Service Card

You polish with the "Touch of Gold" when your wheels or belts are coated with ALUNDUM B abrasive. This extremely hard, sharp grain cuts fast, clean and cool. And the Norton special high capillarity treatment means easier wetting with cement or glue — for maximum adhesion, longer wheel life and better polishing performance.



Norton ALUNDUM B abrasive consists of grains of uniform blocky shape. No flats, slivers or undersize grains to loaf on the job. No oversize grains to mar surfaces. Made in all grit sizes, from 20 through 240, to cover the widest range of polishing operations.

More, and better, polishing with every set-up

ALUNDUM B abrasive brings the cost-cutting, value-adding "Touch of Gold"*

Ask Your Norton Distributor for the booklet "Setting Up Metal Polishing Wheels and Belts." Or write to the nearest district office of NORTON COMPANY, Worcester 6, Mass. Distributors in all industrial areas, listed under "Grinding Wheels" in your phone book, yellow pages. Behr-Manning Company, Troy, N. Y., division of Norton Company. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries G-311

NORTON
ABRASIVES

Making better products... to make your products better

NORTON PRODUCTS: Abrasives • Grinding Wheels • Grinding Machines • Refractories
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For more data circle 129 on Reader Service Card

New---from H-VW-M

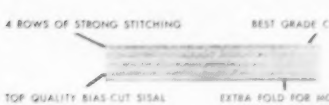
Sisal-Flex and Tufta-Flex Contour Buffs

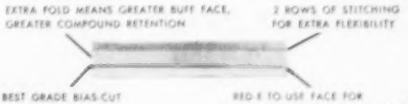
For fast, heavy-duty cutting on hard metal having contoured surfaces, choose flexible, strong, long-wearing new SISAL-FLEX Buffs! Overlapped SISAL-FLEX construction means cool running, no streaking, unusual pliancy. Check these features:

- **Best grade sisal is bias cut, then bound in top grade bias-cut cotton cloth . . . never frays, never scratches!**
- **Each buffing pad has *extra* fold . . . gives more buffing face, carries more compound on circumference and leading edges.**
- **Ventilated steel center, in 5", 7" and 9" dia. sizes. Note *extra* row of stitching around center.**
- ***Four* rows of stitching, for strength, longer wear.**
- **Also available with triple sewn buffing pads. Both types come in standard sizes from 12 to 18 inches in diameter.**

For fast, lighter cutting on contoured work where the final finish must be smoother, choose strong, unusually flexible, long-wearing new TUFTA-FLEX Buffs! Overlapped TUFTA-FLEX construction means no streaking, positive cutting, cool operation. Look for these special features:

- **Each buff pad made of strong 86/93 cotton—bias cut to prevent fraying, increase wear.**
- **Two rows of stitching—super flexible! Extra row of stitching around center.**
- **Double fold provides greater cutting face, extra compound-holding capacity.**
- **Ventilated steel center has rugged clamping teeth for safety.**
- **Available in standard sizes from 12 to 18 inches in diameter.**


4 ROWS OF STRONG STITCHING
BEST GRADE COTTON COVER
TOP QUALITY BIAS-CUT SISAL
EXTRA FOLD FOR MORE BUFF FACE, GREATER COMPOUND RETENTION


EXTRA FOLD MEANS GREATER BUFF FACE, GREATER COMPOUND RETENTION
2 ROWS OF STITCHING FOR EXTRA FLEXIBILITY
BEST GRADE BIAS-CUT COTTON CLOTH
RED E TO USE FACE FOR EASY COMPOUND APPLICATION

Write today for more information, and prices . . . discover how new SISAL-FLEX and TUFTA-FLEX Buffs can mean *savings* in your buffing room!

PLATEMANSHIP

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

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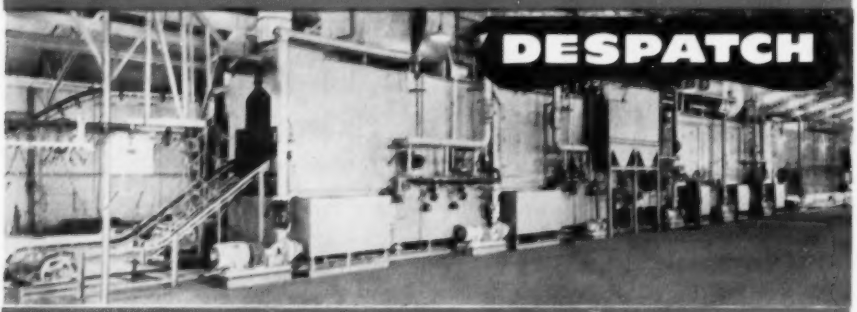
H-VW-M

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

For more data circle 140 on Reader Service Card

Jones and Laughlin Produce Better Barrels To Fit Today's Marketers Needs with—

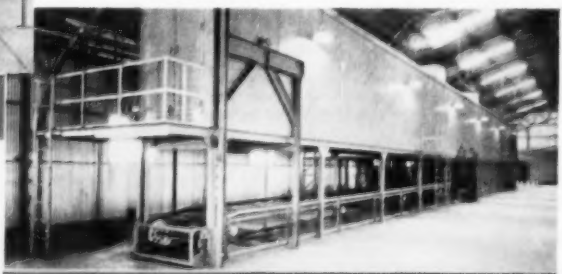


Looking from load/unload end of Despatch 5-stage washer at Jones and Laughlin barrel plant

Load/unload end of phosphatizing machine at Jones and Laughlin

Mechanized From Washer to Finish Bake Oven

5-stage washer (1) cleans, (2) water rinses, (3) zinc phosphate coats, (4) rinses, (5) chromic acids barrels, tops, bottoms. Use of combination overhead monorail and slat type conveyor permits maximum production speed of all units with space conservation. Another example of achievement in quality production with cost savings made possible by 54 years experience of Despatch engineering, manufacturing and installation services.



Barrels are fed after painting to this Despatch Finish Bake Oven on continuous conveyors.

DESPATCH BUILT
Finishing Systems
Write Today for Bulletin 51C

a colorful presentation of Despatch facilities to aid manufacturers requiring better methods for metal finishing.

Minneapolis Office: 619 S.E. 8th Street
Chicago Office: 4554 N. Broadway
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DESPATCH OVEN COMPANY

PIONEERS IN ENGINEERING FINISHING SYSTEMS FOR INDUSTRY

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products finishing

Vol. 20 No. 9 June, 1956

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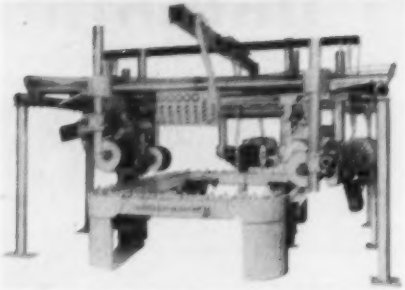

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Automatic

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Reduce Finishing Costs

ADVANTAGES:

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products finishing

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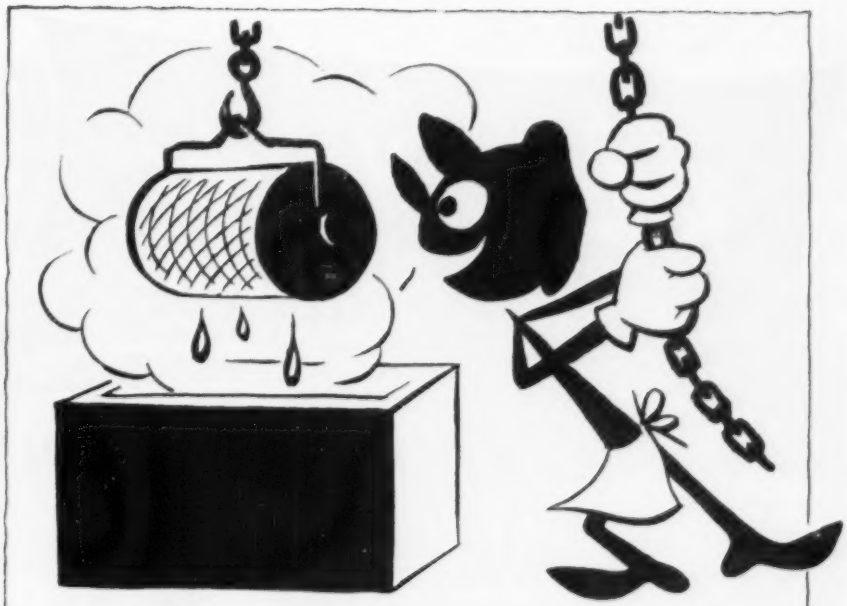

Pickling Pete Knows what's best Picks Monel For the acid test

What's your pickling acid? Sulfuric? Muriatic? Hydrofluoric? Even thin section Monel® equipment serves for years in each. Monel's strong and easy-to-work, too. Get details in free booklet, "5-Way Savings in Pickling."

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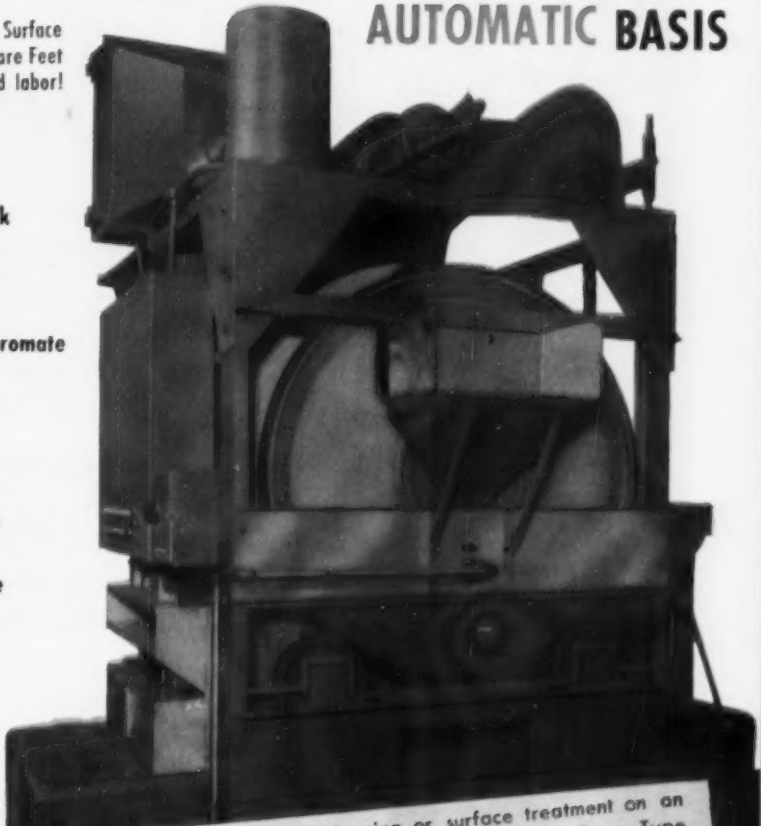
Complete Cleaning or Surface Treatment in Just 90 Square Feet ...saving space, time and labor!

1. Cold water soak
2. Load
3. Cold line rinse
4. Drain
5. Recirculated Chromate bright rinse
6. Drain
7. Cold line rinse
8. Drain
9. Recirculated Alkaline bleach
10. Drain
11. Hot water rinse
12. Drain
13. Hot air dry
14. Unload



Put your metal cleaning or surface treatment on an automatic basis. With this RANSOMATIC Drum Type Machine pushing a button starts the cycle of 14 operations. The RANSOMATIC takes over from loading (8 cubic feet per batch) to automatic unloading 15 minutes later.

A drum or cabinet type RANSOMATIC can be designed to your specific needs . . . large or small parts, any amount of production, for any number or sequence of operations. Through Ransohoff ingenuity, you get "big machine" ability in "small machine" design, with important savings!

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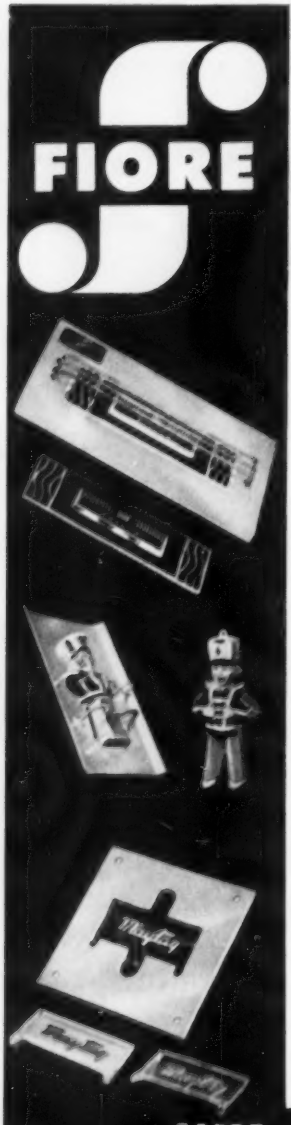
An old name... the newest ideas



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A natural for polishing intricately shaped casting surfaces.

Favorites for bringing-up superior finishes in fast time.

Tops for removing flash from difficult inside contours.

Faster, easier way to finish non-ferrous castings

With these BEHR-MANNING Coated Abrasive Belts on the job, you'll come up with consistently better finishes every time. For example, this operator (above) turns out a steady flow of cast aluminum parts in record-breaking time.

Foundries everywhere are finding BEHR-MANNING Coated Abrasive Belts the answer for superior finishes at today's increased production demands. Try them yourself, in your foundry or at a nearby BEHR-MANNING Application Room. A BEHR-MANNING Representative will gladly demonstrate. Call him today, or write Behr-Manning, Troy, N. Y., Dept. PF-6.

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WIRE BRUSHING and MICRO-FINISHING

• **Proved performance and dependability in industry for half a century**

RECOMMENDATIONS and QUOTATIONS

• *We will be pleased to receive blue prints or preferably finished and unfinished samples of the part you contemplate finishing together with detailed information on present finishing operation and production requirements. On receipt of samples and data we will offer recommendations and quotations.*

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SPECIAL MACHINERY — AUTOMATIC BUFFING MACHINES

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Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR NEARLY HALF A CENTURY

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in a small boys eyes...

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BY
PROMAT

gives the luster
and protection
you want in
decorative
finishes...

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by Promat's research staff has created a completely new, improved alloy which gives the manufacturer of tools, of tubular furniture, of household appliances and of toys, these tremendous advantages:

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2. PROBRITE can be buffed!
3. Chromium plated PROBRITE sealed in Proseal S-30-A prevents corrosive attack.
4. PROBRITE protects and has the luster of the finest decorative finishes!

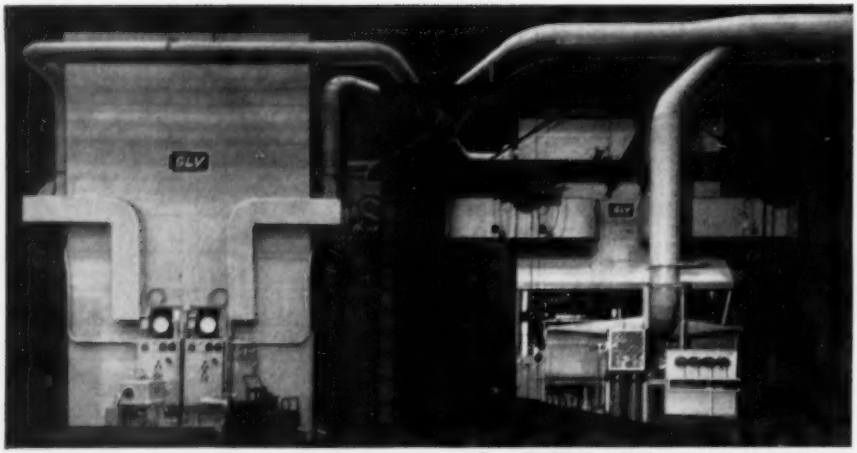
"PROMAT MEANS PROTECTIVE MATERIALS"

*

For more information about this amazing new product write for Bulletin 7 - 3 or send a sample of your product to be plated for your evaluation.

PROMAT DIVISION - POOR & COMPANY
851 SOUTH MARKET STREET Dept. PF-6 WAUKEGAN, ILLINOIS

MANUFACTURING PLANTS
PHILADELPHIA, PA. — WAUKEGAN, ILL. — GARDENA, CALIF.



Four Sly Ovens at General Electric, Erie.

4 SLY Ovens Give Close Baking Control at G. E.

Correct baking of varnish on armatures, field coils and frames is essential to insure full protection to the units in later use. Four tower-type Sly Ovens at the Direct Current Motor and Generator Department at General Electric Co., Erie, Pa., provide the exact temperature required. They are an integral part of production, assuring a smooth, continuous flow.

The ovens are arranged in pairs. Each is a double-compartment oven with a common wall separating the zones. Each zone has its own heating and control system and individually automatic, program controlled conveyor system to meet the required, preheat, first and second baking operations. Complete cycle includes preheating, varnish dip, 4-hour bake, varnish dip and another 4-hour bake. Operations are such that the ovens reach their required temperatures prior to the start of the work day.

This installation is typical of the time and money savings Sly Convectioneered Ovens bring to drying, baking and finishing operations. *Write for catalog describing Sly's complete line.*

Designers and Manufacturers of: Dust Control Systems, Industrial Ovens, Blast Cleaning Equipment, Tumbling Mills.

SINCE 1874 SLY

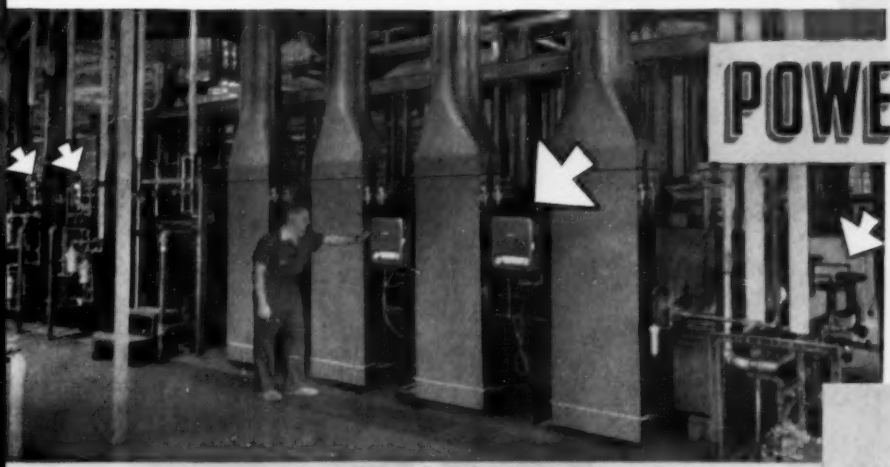
THE W. W. SLY MANUFACTURING CO.

4784 TRAIN AVENUE • CLEVELAND 1, OHIO

OFFICES IN PRINCIPAL CITIES

For more data circle 150 on Reader Service Card

FOR TEMPERATURE CONTROL *Call* POWERS



Powers Control on Automatic Plating Machine.
Left, Self-Operating Regulators for Cleaning and Rinsing Operations. Right, Air-Operated Temperature Indicating Controllers Regulating Chromium Plating.

Sunbeam CORPORATION ASSURES HIGH-QUALITY VOLUME PRODUCTION FINISHING WITH POWERS TEMPERATURE CONTROLS

Metal finishing operations at Sunbeam Corp. are critical. A world-known reputation for quality appliances makes rigid final inspection essential. Yet, high-volume production must be maintained on modern automatic metal finishing equipment.

As an essential aid to high-quality, high-volume metal finishing operations, Sunbeam Corp., uses Powers Temperature Control Equipment extensively throughout their Chicago and Canadian plants.

Powers Temperature Controls can help you, too . . . whether your plant be large or small. They'll help you turn out a better product, while saving you money. Contact the Powers office nearest you, or write us direct.

(b74a)

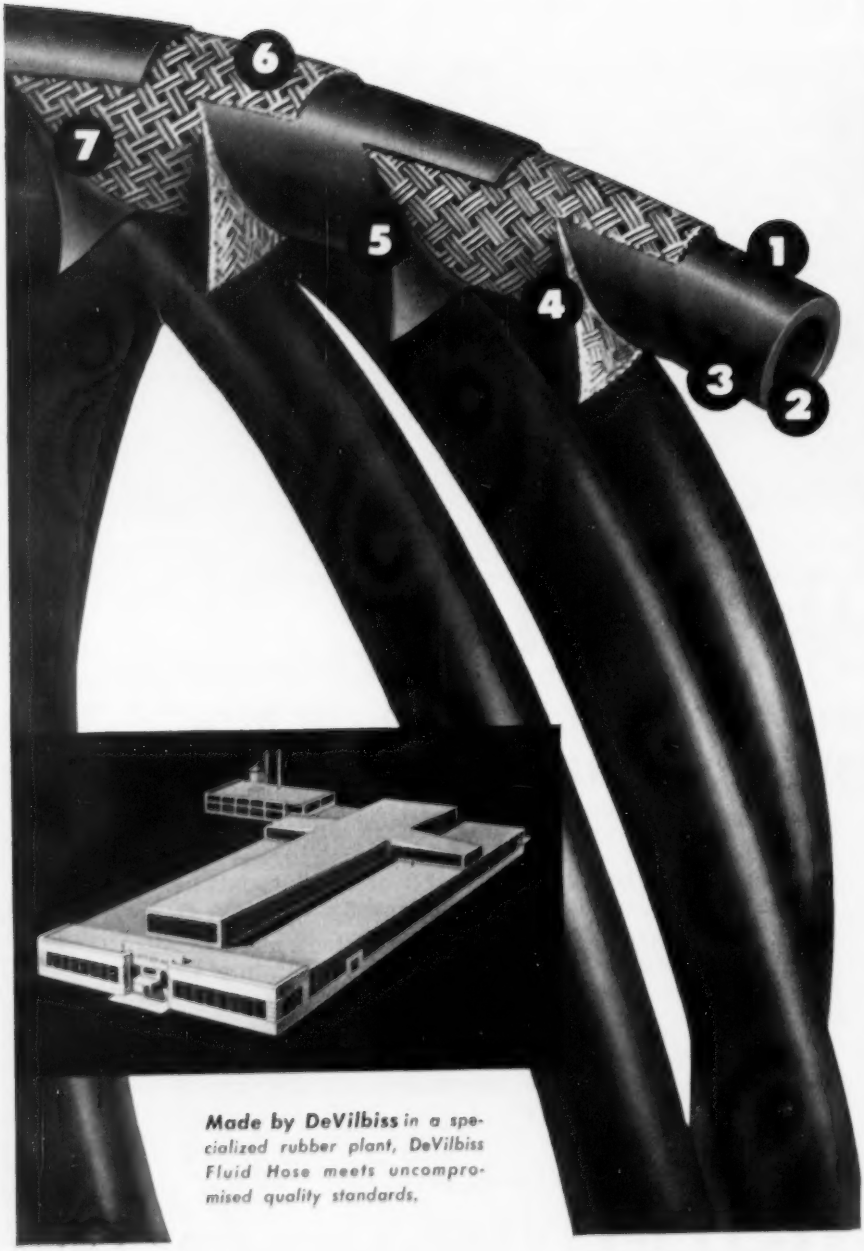
SUNBEAM FRYPAN

SUNBEAM COFFEEMASTER

SUNBEAM MIXMASTER

POWERS CONTROL

THE POWERS REGULATOR COMPANY
SKOKIE, ILLINOIS
Offices in 60 Cities in U.S.A., Canada, and Mexico • See Your Phone Book
OVER 60 YEARS OF AUTOMATIC TEMPERATURE AND HUMIDITY CONTROL



***Made by DeVilbiss** in a specialized rubber plant, DeVilbiss Fluid Hose meets uncompromised quality standards.*

7 reasons why DeVilbiss Fluid Hose is your best hose buy!

1 Less swelling and disintegration— Subjected for seven days to solvents (acetone, ethyl acetate, toluol, thinner) — the DeVilbiss tube shows 50% less swelling and deterioration than seven other makes! Thus, you can use it on practically any job, to handle a wide range of materials, without the liner scaling to clog spray guns or contaminate paint.

2 Accurate size — Both inside and outside diameters are held to extremely close tolerances for uniform flow of materials, and easier, more secure attachment of connections.

3 Less discoloration—Test after test, and in actual use, DeVilbiss Fluid Hose shows less discoloration to paints; assures true, consistent colors.

4 Resists kinking — Because of special weaving methods and quality control, DeVilbiss Fluid Hose incorporates the proper angle of braid and weave-tension of yarn. Result: high resistance to kinking.

5 Tougher compounds — With tensile strength as high as 1000 PSI, DeVilbiss Fluid Hose lasts longer, even under heavy abuse!

6 Stronger construction — The correct angle of braid also reduces expansion under pressure. This angle weave takes more yarn and makes the hose firmer . . . yet leaves it highly flexible.

7 High burst pressure — You need never worry about DeVilbiss Hose splitting — burst strength is 3½ to 5 times normal-use pressures! DeVilbiss Fluid Hose is priced right too . . . in some cases it costs no more than the "medium grades" of other makes.

DeVilbiss has gained an intimate knowledge of your fluid-hose *and air-hose* requirements through years of research and spray-painting experience. This background assures hose of unmatched durability and service. Full range of sizes available at your DeVilbiss distributor or sales office.

THE DEVILBISS COMPANY
Toledo, Ohio

Santa Clara, Calif. • Barrie, Ontario
London, England

BRANCH OFFICES IN PRINCIPAL CITIES

FOR BETTER SERVICE, BUY
DEVILBISS

For more data circle 152 on Reader Service Card

IN AND OUT

Is All It Takes To—

• DRY
• PROTECT

For those plating silver, brass, or copper—

Merely out of the last hot water rinse, and in and out of Nikolas **Water Dip Lacquer,** removes all traces of water and deposits a durable transparent coating that will resist fingerprinting, tarnishing and mild scratches that have previously involved unnecessary rejects.

For those using plated parts in production—

Parts finished with Nikolas **Water Dip Lacquer,** assure you of untarnished parts, less rejects, and the necessity of ultra careful handling. If the final operation calls for soldering, no preparation is necessary, as the coating provides a chemically clean base metal that assures perfect bonds.

FOR COMPLETE INFORMATION ON WATER DIP LACQUERS

CALL, WIRE OR WRITE

G. J. NIKOLAS & CO., Inc.

Manufacturers of Finest Lacquers Since 1895

2880 WASHINGTON BLVD.
BELLWOOD, ILLINOIS

33 GRAND ST.
BROOKLYN, N. Y.

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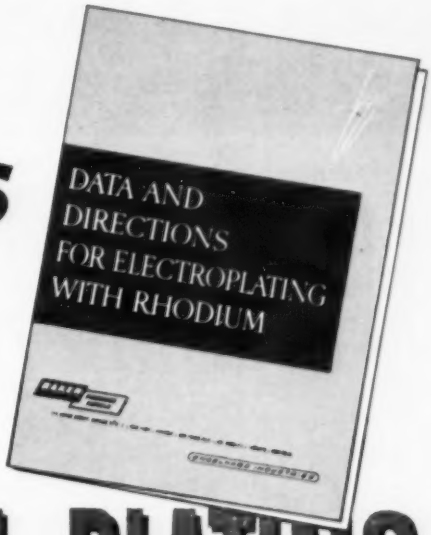
BAKER'S

new, up-to-date, more complete handbook on



RHODIUM PLATING

*Yours **FREE** for the asking!*

Newly revised and expanded, with detailed data, technical information, and the many different applications of Rhodium Plating. Of interest to both manufacturers and electroplaters.

Send for this valuable handbook, on your company letterhead.

BAKER & COMPANY INC **PRECIOUS METALS**

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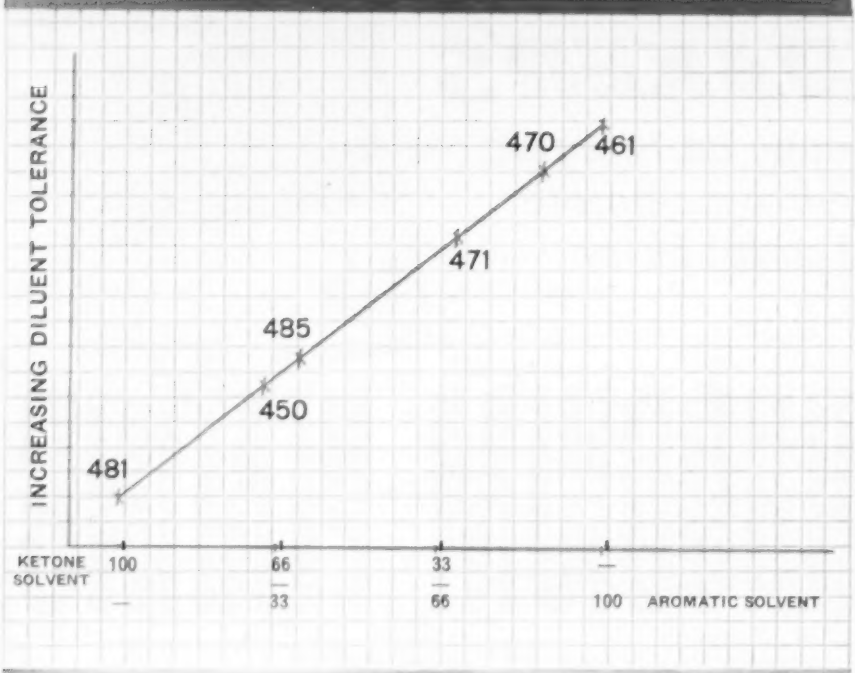
NEW YORK • CHICAGO
SAN FRANCISCO • LOS ANGELES

ENGELHARD INDUSTRIES

For more data circle **154** on Reader Service Card

EXON SOLUTION RESINS—VINYL CHLORIDE TYPE



→ pick your proper solution resin at a glance!

• Another Firestone service to help you make the right resin choice!

These 6 EXON solution resins are engineered precisely, varying in properties to suit various applications and uses—but never varying in quality of performance.

Further product details below. Keep this chart handy to help you choose easily and accurately.

EXON 450—Ideal for strip coatings. Good solubility, tensile strength, durability.

EXON 461—A unique fluorine-containing resin that combines high solubility with unusual chemical resistance, heat stability and weatherability.

EXON 470—Exhibits excellent adhesion to metals, alkyd and vinyl surfaces. Compatible with wide range of drying oils, alkyds, phenolics, and melamines. Economical, too—with high solubility in inexpensive solvents.

EXON 471 — Excellent for weatherability and durability in a protective coating. Corrosion resistant. No measurable change after sunlamp exposure for 360 hours as 1 mil film.

EXON 481 — Important development in resins. Makes possible colorful abrasion-proof, washable coatings that resist fading or cracking.

EXON 485 — For superior strip coatings. Lower viscosity makes application easier and shelf-life better. Good clarity.

Firestone

For complete information and technical service, call or write:

CHEMICAL SALES DIVISION

FIRESTONE PLASTICS COMPANY, DEPT. 45H. POTTSTOWN, PA.

A DIVISION OF THE FIRESTONE TIRE AND RUBBER COMPANY

For more data circle 155 on Reader Service Card

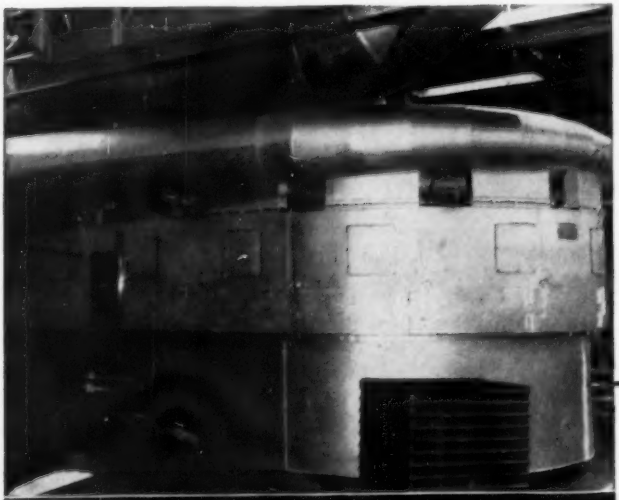
KIRK AND BLUM
FUME CONTROL SYSTEM
Saves 5 Ways..

1. REDUCES AIR VOLUME
2. LOWERS MAINTENANCE COSTS
3. CUTS REPLACEMENT COSTS
4. IMPROVES WORKING CONDITIONS
5. ELIMINATES DAMAGE TO OTHER EQUIPMENT

In large and small plants, Fume Control Systems engineered, fabricated and installed by KIRK & BLUM show substantial savings by increasing the life of costly plating equipment.

Here, a hood with convenient access openings encircles the tanks — preventing cross currents and reducing air volume requirements.

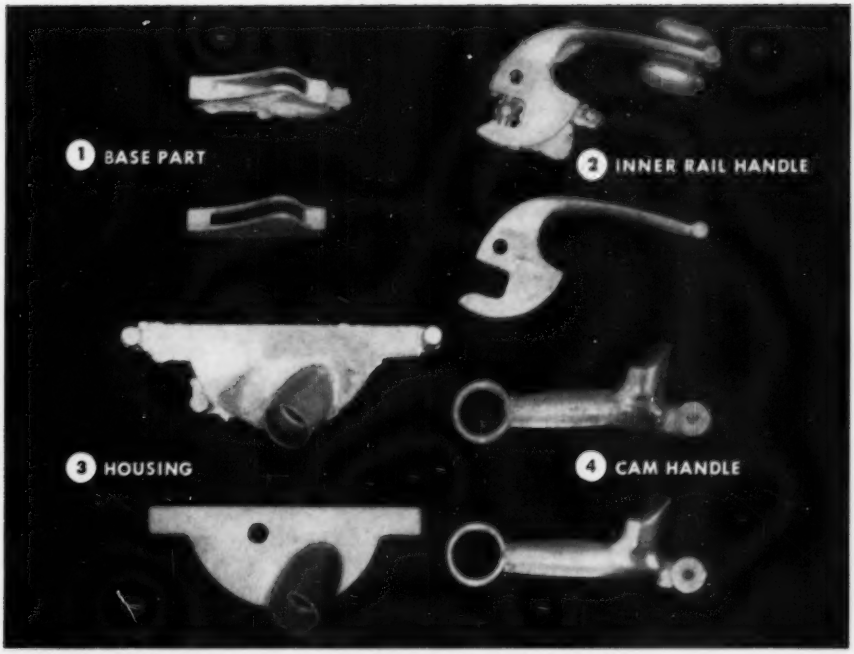
Fumes are picked up at the outside of the tank, clean air is drawn over the machine's mechanism in the center. This keeps damaging corrosive fumes away from costly moving or mechanical parts.



KIRK & BLUM Fume Control on an Automatic Plating Machine in a noted auto ignition parts plant. Note hinged anode access and inspection doors just above tank top.

Write for Booklet F, showing typical installations.
The Kirk & Blum Mfg. Co.,
3116 Forrer Street,
Cincinnati 9, Ohio

For more data circle 156 on Reader Service Card



Nationally known window manufacturer finds:

HONITE Method cuts finishing costs on aluminum die castings up to 96%

1. COST CUT 96.3% on trimming a base part for a jalousie window unit. Old hand method cost .0027¢ per unit: HONITE Method costs .0001¢ per unit.

2. COST CUT 96% on smoothing a jalousie window inner rail handle. Old hand grinding method cost .015¢ per unit: HONITE Method costs .0006¢.

3. COST CUT 78% on trimming a housing for a jalousie window unit. Old hand method cost .0055¢ per housing: HONITE Method costs .0012¢ per housing.

4. COST CUT 96% on polishing a cam handle for a jalousie window. Old hand grinding method cost .015¢ per unit: HONITE Method .0006¢.

You can cut costs with the HONITE Barrel Finishing Method, too! Call your HONITE Field Engineer today. Or write to Minnesota Mining and Manufacturing Company, Dept. FI-66. St. Paul 6, Minn., for FREE copy of booklet: "Facts and Figures Report on HONITE Barrel Finishing."

Honite BRAND

PRODUCT OF 3M RESEARCH

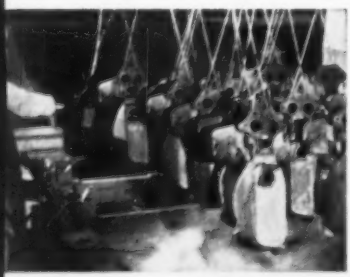
Made in U.S.A. by Minnesota Mining and Mfg. Co. General Offices: St. Paul 6, Minn. In Canada: P.O. Box 757, London, Ontario. Export Sales Office: 99 Park Avenue, New York City. Makers of "SCOTCH" Brand Pressure-Sensitive Tapes, "3M" Adhesives, "Safety-Walk" Non-slip Surfacing.

For more data circle **157** on Reader Service Card

DOW

DOW SODIUM ORTHOSILICATE

Heaviest-duty cleaning at once-over-lightly speed and cost



Name your roughest job . . . its size, shape, the finis
you're applying. How to clean it? Without argumen
Dow Sodium Orthosilicate cleaning compound.

Oils, fats, waxes . . . Dow Sodium Orthosilicate's hig
acid capacity and high pH give uniform, reject-free clea
ing run after run. You can use it economically with di
soak and electrolytic operations. There's a particular
good saving on electrolytic: solutions of Dow Sodiu
Orthosilicate have very high electrical conductivity, pe
mitting any current density *without* excessive voltag

Ready emulsification, no redeposition, fewer rejects a
lowered cost per run. No wonder it's Dow Sodium Orth
silicate, without argument. Get your order in *today*. TH
DOW CHEMICAL COMPANY, Dept. AL 760K-1, Midland, Mich
gan.

you can depend on DOW CHEMICALS DOW

Experience

WATSON-STANDARD'S EXPERIENCE IN FORMULATING SPECIALIZED COATINGS IS INVALUABLE TO METAL FINISHERS

If your product includes metal finishing in its manufacture, it is wise to consult the Watson-Standard Laboratories on your coating problems. The services of our laboratory and field technicians are available without obligation.

"Knowledge, skill and technique through EXPERIENCE"

Watson-Standard Co.

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INDUSTRIAL FINISHES • PAINTS • PLASTICS • CHEMICALS

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you can depend on DOW CHEMICALS

– INTERNATIONAL-504

Remove shop dirt, oil, grime and compounds from metal quickly . . . and completely at room temperatures. That in brief is the story of International-504, the new amazingly efficient cold cleaner for washing machine use.

International-504 is a blend of specially compounded detergents, wetting agents, high-solvency-power naphthas and solvents that literally dissolves dirt. When left on the work after cleaning, International-504 provides an excellent, temporary rustproofing film.

In terms of lower cleaning costs and more effective results, it will pay you to get the facts about International-504—the superior cold cleaner.

INTERNATIONAL CHEMICAL COMPANY
Specialists in Cleaners and Coolants for Industry
2628 N. Mascher Street • Philadelphia 33, Pa.

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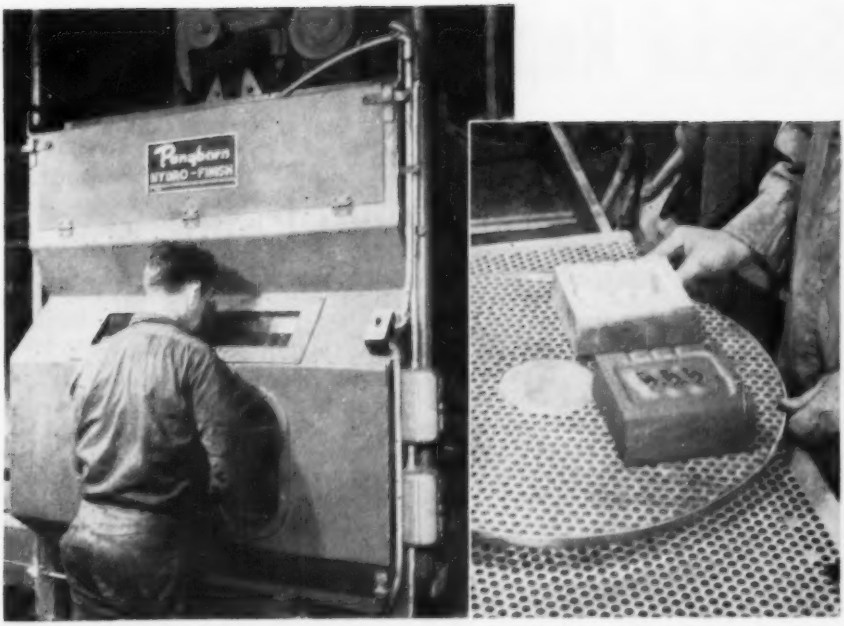

Pangborn HYDRO-FINISH wet blasting Saves $22,500 a year for Imperial Brass!

Pangborn Hydro-Finish wet blasting is used at Imperial Brass Mfg. Co., Chicago, to remove heat scale and carbon deposits from dies. Imperial Brass is highly gratified with results. Hydro-Finish does a perfect cleaning job and gives a smooth finish, with no breakdown of sharp edges or loss of tolerances. It has required no maintenance in its 1½ years of operation. And Hydro-Finish has cut time and labor costs so drastically that the firm saves $22,500 a year on this step alone!

If *you* clean dies and molds, you should investigate Pangborn Hydro-Finish . . . now offering even lower investment and more efficient operation by using air jet sluriators instead of a pump. Write for Bulletin 1402 to PANGBORN CORP., 5000 Pangborn Blvd., Hagerstown, Md. *Manufacturers of Blast Cleaning and Dust Control Equipment.*

Pangborn

BLAST CLEANS CHEAPER

2-H

For more data circle 161 on Reader Service Card

Special Reports On Finishing

NUMBER II—Paint Base, Corrosion-Resistant Finishing with Iridite®

WHAT IS IRIDITE®?

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

Chromate conversion coatings are well known and accepted throughout industry as an economical means of providing corrosion protection, a good paint base and decorative finishes for non-ferrous metals. However, continued developments have been so rapid and widespread that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this digest of current information; to bring you up to date on the many ways in which you can obtain proper surface preparation for painting and increase product durability with a single multi-purpose chemical pretreatment. Report I on decorative, corrosion-resistant finishes and Report III on chemically polished, corrosion-resistant finishes are available on request.

First, it is an accepted fact that metal surfaces should be prepared before painting to make possible an efficient paint system. Naturally, this preparation should provide for good initial paint adhesion. Chemical treatments have proved extremely effective in this respect, particularly those of a neutral or preferably acid nature. Further, to be most efficient, chemical treatments should provide a non-porous barrier to maintain adhesion by sealing the metal from the paint and moisture. They should also provide a self-healing film which prevents lateral corrosion in the event that bare metal is exposed through scratching.

The Iridite chromate conversion coatings meet all these requirements. Iridite is a chemical conversion treatment for surface preparation. It provides initial paint bonding by molecular adhesion. It is acid in nature and produces a film that is gel-like and non-porous in structure. Thus, the Iridite film effectively seals the metal from the paint and from moisture penetration. Because the film contains certain relatively soluble constituents, it will protect areas scratched through to bare metal and prevent lateral corrosion. This is accomplished by a gradual leaching of these constituents into the damaged area.

Further, because of its gel-like, non-crystalline nature, the Iridite film will not affect the appearance or texture of the paint film, nor will it dust or powder to

Adv.

Non-Ferrous Metals

mar the painted surface. Because the film is non-porous, paint coverage is increased, thus substantial savings in paint costs will be realized. In addition, treated parts may be stored for long periods of time prior to painting without the risk of entrapped moisture causing blistering when painting.

Iridite chromate conversion coatings are widely used with equal ease and success under both baked and air-dried paint systems. While the actual adherence properties of the Iridite film do not increase appreciably with its thickness, corrosion protection does. The protection of the Iridite film is proportionate to its thickness and should be taken into consideration when selecting the Iridite to meet your needs. However, it is sometimes necessary to sacrifice maximum corrosion protection for appearance when a finished part is to be only partially painted. For example, it may be desirable to use a thin, clear, bright Iridite film if the unpainted areas must present a chrome-like appearance. A typical case is that of instrument housings on which the exterior is painted and the inside left unpainted.

On the other hand, if all surfaces of the product are to be painted and maximum corrosion protection is required, the heavier and most protective Iridite films should be used. For example, all surfaces of zinc die cast fruit juicers are finished with a highly protective Iridite film prior to painting to provide maximum resistance to the corrosive action of fruit juices.

Iridite finishes are now available for all commercial forms of the more commonly used non-ferrous metals, including zinc, cadmium, aluminum, magnesium, silver, copper, brass and bronze. In addition to providing an excellent base for paint, the Iridite films also have high decorative value when used as final finishes in themselves.

These films can produce a wide variety of pleasing appearances including clear bright, iridescent yellow, bronze, olive drab and brown. In addition, many films can be modified by bleaching or by dyeing. Among the dye colors available are various shades of red, yellow, green, blue or black.

In planning or designing, you should consider the many other characteristics of Iridite finishes which may enter into the specific problem. In addition to their functions as protective and decorative finishes, and as bases for organic finishes and bonding compounds, Iridites have low electrical resistance. Some can be soldered and welded. The film does not affect the dimensional stability of close tolerance parts.

Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product requires the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 East Monument Street, Baltimore 5, Maryland.

Adv.

For more data circle 162 on Reader Service Card

Increase Your Product's *Sales Appeal*

– by Using COPON

the revolutionary protective coating that resists acids, alkalis, abrasives, rust and corrosion

Because COPON is a coating with so many remarkable features, it gives products important selling advantages. Perhaps COPON is just what you need to give your product new, dynamic sales appeal. Write us about your coating problems.

COPON is manufactured under an exclusive franchise by the select group of companies listed below. Contact the company nearest you for details.

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50 Jay Street, Brooklyn 1, N. Y.

JAMES B. SIPE and COMPANY, INC.
P. O. Box 8010, Pittsburgh 16, Pa.

COAST PAINT & LACQUER CO.
P. O. Box 1113, Houston 1, Texas

HANNA PAINT CO., INC.
P. O. Box 3206, S. H. Station
Birmingham 5, Ala.

ENTERPRISE PAINT MANUFACTURING CO.
2841 So. Ashland Ave., Chicago 8, Ill.

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65 W. First South St.
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BRITISH AMERICAN PAINT CO., LTD.
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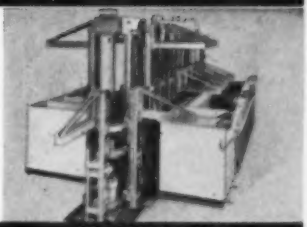
For more data circle 163 on Reader Service Card

AN AUTOMATIC MACHINE FOR EVERY METAL FINISHING NEED

Low initial and low operating costs are features of this newly introduced small automatic which has a big capacity for its size.

"LITTLE STEVE"
Rack Type Machine

Unit's load capacity, mechanical flexibility and lift design meet tomorrow's increased safety and production requirements.



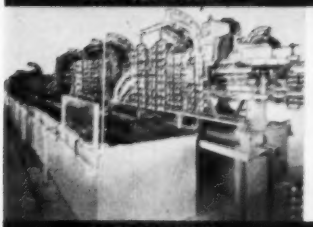
"STEVADOER"
Rack Type Machine

A compact automatic processing machine, embodying the famous Stevens auxiliary cam shaft and lifters for rapid vertical transfer.

MODEL "A"
Rack Type Machine

A proven automatic barrel machine for plating and processing small parts. Only unit with fully automatic load and unload features.

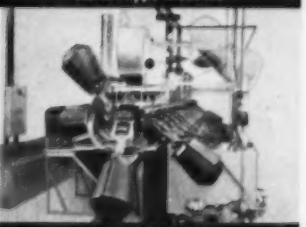
MODEL "C"
Barrel Type Machine



Features rapid, continuous movement processing employing hump type cams. Design permits utmost mechanical and cycle flexibility.

MODEL "B"
Rack Type Machine

Large capacity automatic barrel unit for volume production. Embodies major features of the famous Stevens Model "C" machine.



"SUPER E"
Barrel Type Machine

The Stevens family is now complete. Six Stevens automatic plating and processing machines fill every need for metal finishing.

Latest addition to the complete line of Stevens automatic metal finishing machines is "Little Steve." Announcement of the new "Little Steve" follows by a few months the recent introduction of Stevens heavy-duty "Stevadoer" Processing machine.

Now you can go automatic in any and all of your plating operations. Stevens can furnish a job-engineered, cost-cutting, fully automatic machine that will answer every production need whether it be for electroplating, cleaning, anodizing, bright dipping. You will get better control, better finishes and eliminate rejects with Stevens Automatics.

Why not see how one of Stevens great family of automatics can be engineered for your metal finishing operations? Call in a Stevens Sales Engineer today or write direct to —

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VISIT US AT OUR SUITE HOTEL STATLER
DURING THE AMERICAN ELECTROPLATERS
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YOUR METAL FINISHING SUPERMARKET
DETROIT 16, MICHIGAN

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PAINTING
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Master Metal Craftsmen

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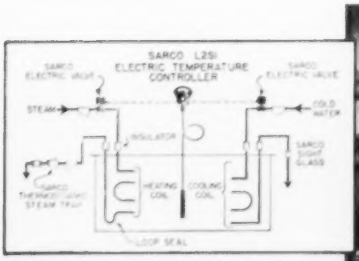
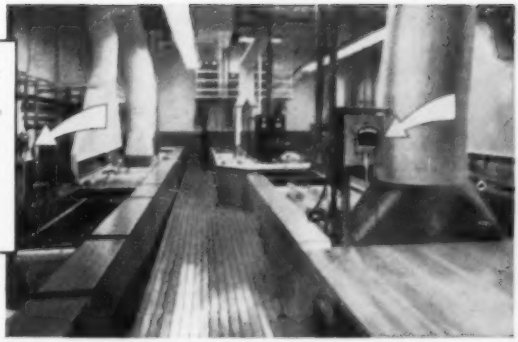
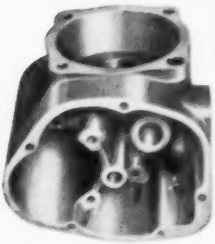
For more data circle 165 on Reader Service Card





Scientific plating department of Woodward Governor Co., Rockford, Ill., meets exacting government specifications. All plating and cleaning process tanks are equipped with Sarco Electric Indicating Temperature Controllers.

Tough precision plating problem solved by low-cost Temperature Control



0.0002" tolerance held by Woodward Governor in plating irregular and deeply recessed surfaces

PROBLEM—Look at the above case for an aircraft propeller governor. Its irregular shape and deep recesses present a tough plating problem.

Furthermore, Uncle Sam specified a top quality plate with a thickness tolerance of 0.0003 to 0.0005 inch... to assure mating of parts.

SOLUTION—Key to the solution of this precision plating problem is control of all the variables...and by far the most important is *bath temperature*. When it fluctuates, so does the plate quality... current density is affected...and, therefore, throwing power varies, causing uneven plate thickness.

That is why *all* Woodward Governor plating tanks are equipped with Sarco Electric Indicating Temperature Controllers, which automatically hold the plating solutions to ±½°F.

RESULTS—A top-quality deposit. Throwing power that assures uniform plating thickness on all surfaces...plane, irregular and recessed. Tolerance of 0.0002 inch...actually closer than government specifications. Minimum rejects.

Mr. Delbert L. Zeigler, plant manager of Woodward Governor, writes: "Sarco Electric Temperature Controls are doing an excellent job in every way."

Write for Handbook No. 6 or consult your plating supplies jobber. Sarco Company, Inc., Empire State Bldg., New York 1, N. Y.

Sarco Electric Temperature Controller

ADVANTAGES FOR ALL TYPES OF PLATING

LOW COST—about $100

EASY ADJUSTMENT—turn one knob to change temperature setting

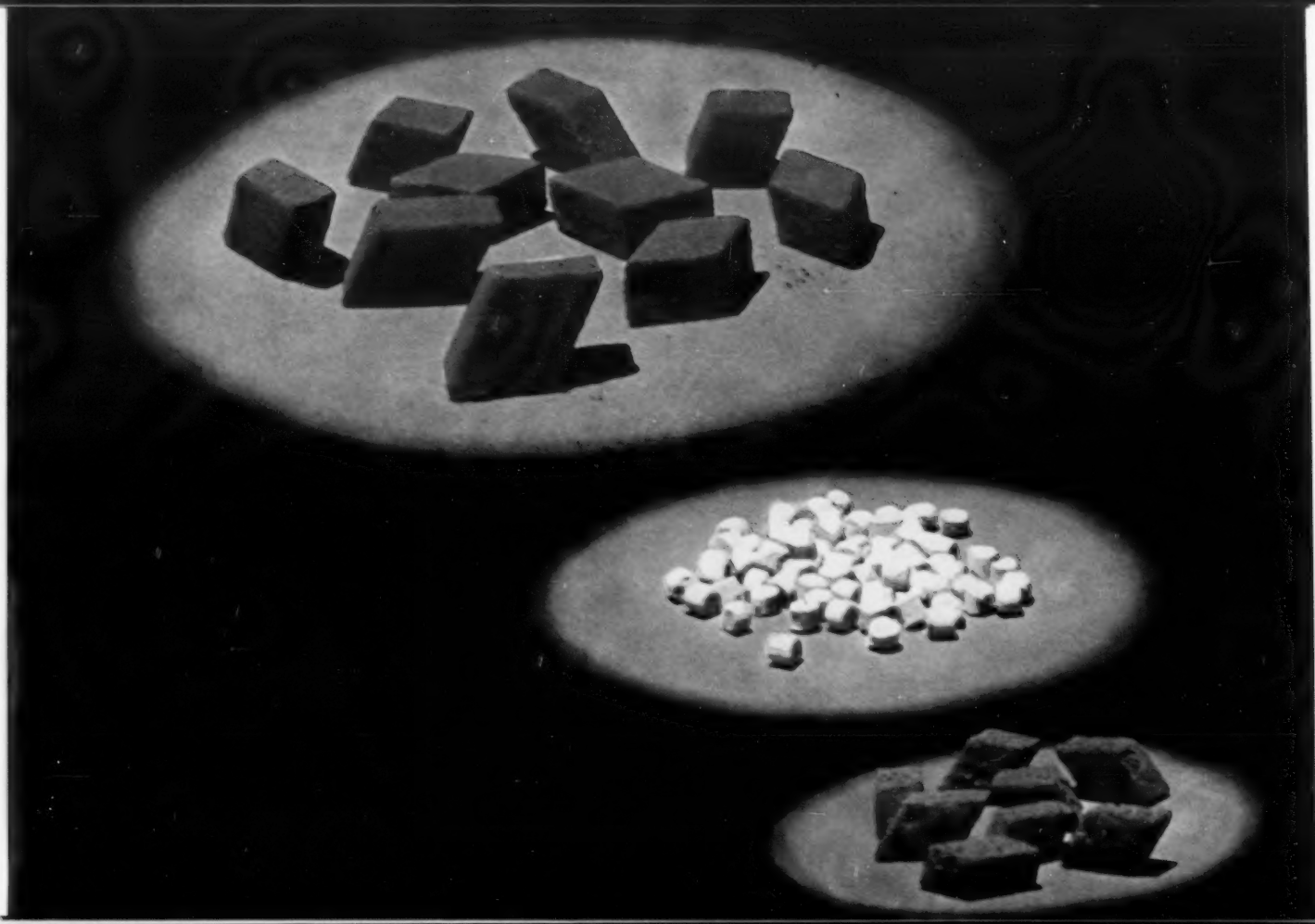
ELIMINATES DIFFICULTIES often caused by unreliable manual temperature control:

- Changes in current density
- Variations in plate thickness
- Variations in quality
- Dull finishes
- Breakdown of plating solutions
- Crystallization of salts
- Rejects

SARCO

improves product quality and output

For more data circle 166 on Reader Service Card



The shape of things to cut

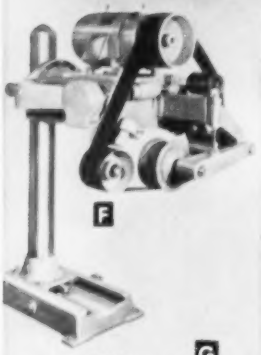
Here's the most exciting development in abrasive tumbling since the invention of the tumbling barrel... *Bonded* Nuggets by CARBORUNDUM. These nuggets are available in specific shapes—meeting all present-day requirements. Thanks to controlled and absolute uniformity of shape and size, Bonded Nuggets assure unmatched control in your tumbling operations, with predictable performance on every job. These Bonded Nuggets lend themselves to loose grain additives which are frequently introduced for increased and better performance. On any tumbling job you have, you'd do well to consult your CARBORUNDUM Distributor or salesman for up-to-the-minute information on abrasives and techniques. Or write The Carborundum Company, Niagara Falls, New York. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ont.

Through application "know-how" and product quality

CARBORUNDUM

REGISTERED TRADE MARK

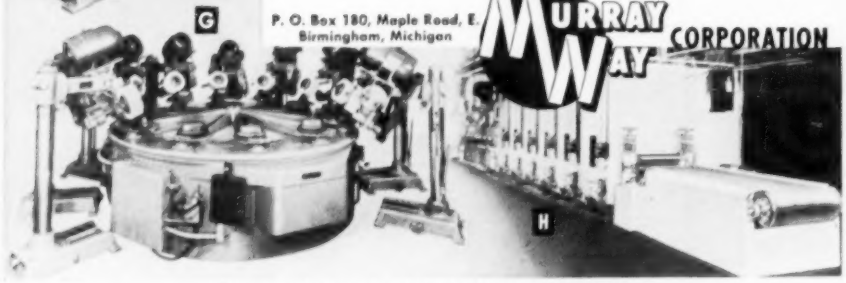
continually puts more sense in your abrasive dollar



to POLISH . . . BUFF . . . GRIND . . . FILTER

Whatever your job . . . whatever your problem . . . Murray-Way automatic equipment will do that job better and more economically • These are just a few illustrations of Murray-Way's success in beating production cost with the finest automatic equipment available • You can depend on Murray-Way engineering, Murray-Way experience, Murray-Way equipment to solve your production problems.

A. Micro-Polish—Continuous Strip Polishing Installation
B. Vertical-Platen Conveyor
C. Horizontal-Platen Conveyor
D. #51 Universal Polishing Head —One of Several Standard Polishing Heads
E. The Automatic, Self-Cleaning, Compact Filter
F. #72 Series Belt Polishing Head
G. Indexing Dial Table
H. Six Micro-Polish Units in Series



P. O. Box 180, Maple Road, E.
Birmingham, Michigan

MURRAY WAY CORPORATION

For more data circle **168** on Reader Service Card

Time it . . for the fastest booth maintenance try "LIQUID ENVELOPE"

the original, firesafe, strippable
SPRAY-BOOTH COATING

Spray it on. When overspray accumulates, peel it off . . . fast. Promotes fire-safety and improves illumination. Firesafe, too. "Liquid Envelope" film will not burn or support combustion. Used from coast-to-coast for over 10 years. New users: Order a 5-gallon test-sample at the drum-lot price. Start saving soon!

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4 New ROHCO® Products For Cadmium Plating . . .

RODIP CD-3 — A powder dissolved in water to form a chromate conversion bright dip that produces, without leaching, a brilliant appearance with excellent corrosion protection.

CĀDIP — Fills an important need for inhibiting discoloration of cadmium plating, particularly upon baking for relief of hydrogen absorption. Used in the final hot water rinse after plating.

CADSOL — A concentrated cadmium solution for easy maintenance or for new bath make-up. Eliminates the nuisance of dissolving cadmium oxide; provides a pure bath.

SUPER XL — Is the newest, most nearly perfect addition agent yet developed for cadmium plating. A trial will convince you of its ability to produce the clearest and most uniform deposits ever seen.

R. O. HULL & COMPANY, INC., 1304 Parsons Ct., Rocky River 16, Ohio

TRY THESE YOURSELF! JUST PIN THIS COUPON TO YOUR LETTERHEAD!

R. O. HULL & COMPANY, INC.
1304 Parsons Court
Rocky River 16, Ohio

Send samples and complete information on:
☐ RODIP CD-3 ☐ CADSOL
☐ CĀDIP ☐ SUPER XL

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Company _____

Street Address _____

City _____ Zone _____ State _____

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SHELL QUALITY GROUP SOLVENTS

Dependable in purity and supply . . . bringing you maximum flexibility in lacquer formulation at no extra cost.

Whether you make nitrocellulose or vinyl lacquers, the high purity of Shell Chemical's "Quality Group" solvents makes them *worth more* to you.

You pay no extra for this high purity, yet you gain substantially in ease and flexibility of formulation. You buy active and latent solvents *separately*. You formulate them to *your own* requirements.

You can save money on multiproduct shipments in compartment tank cars or tank trucks at bulk prices. And you can be sure of prompt shipment from conveniently located bulk depots.

Your Shell Chemical representative will be glad to show you why leading lacquer formulators prefer Shell quality solvents. Write for literature on specific solvents.

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More Cleaning Per Tank

And you can put a lot of metal work through a cleaning tank charged with

Cowles NS SOAK CLEANER

because Cowles NS Soak Cleaner has *extra soil capacity.*

Cowles NS Soak Cleaner gives you *more emulsifying* action—*more power* to hold loosened soil in suspension long after ordinary soak cleaners have broken down.

No scum on the cleaning tank to foul cleaned metal coming out. Clean it with Cowles NS Soak Cleaner and it stays clean. Your tanks stay clean, too. No sludge build-up.

For tips on *soak tank* cleaning before plating, enameling, other finishing—

Send this coupon for NS Technical Bulletin

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Please send Cowles NS Bulletin

Name_____

Company_____

Address_____

City_____ State_____

Cowles CHEMICAL COMPANY
Cleveland 3, Ohio

See Cowles' other advertisement on page 71

For more data circle 172 on Reader Service Card

Vol. 20, No. 9
JUNE, 1956

A Convention for Metal Finishers

The American Electroplaters' Society cordially invites you to attend its Annual Convention, which is being held at the Statler Hotel in Washington, D. C., June 17 through 21.

Starting Monday morning, forty papers on various phases of metal finishing will be presented by leading authorities in the Industry. These papers are the result of the efforts of Dr. Abner Brenner of the National Bureau of Standards and the Editorial Board of the Society. There will be full opportunity for discussion of these papers.

The Educational Sessions will be dual ones; this gives you the opportunity to be selective. While the Educational Sessions are being held, the distaff side will be enjoying the attractive program which has been arranged by the Ladies' Committee.

The papers, the discussion following their presentation, and the many valuable contacts which you will make, demand your presence.

COME TO WASHINGTON, IT'S A CAPITAL IDEA!

Clyde Kelly
President,
American Electroplaters' Society

43rd

ANNUAL CONVENTION

AMERICAN ELECTROPLATERS' SOCIETY

JUNE 17 - 21 — HOTEL STATLER

WASHINGTON, D. C.

Arthur G. Pierdon
General
Chairman

Welcome to Washington:

Your Nation's Capitol invites you to attend the 43rd Annual A.E.S. Convention. In keeping with the increasing importance and complexity of the metal finishing industry, our Educational Committee, under the able leadership of Dr. Abner Brenner, National Bureau of Standards, has collected the largest number of papers ever given at any A.E.S. Convention. The quality and timeliness of these papers matches their quantity.

For the past two years our Committee has been planning a program for your entire family. A trip to Washington is both an education and a delightful experience. The Capitol is a city of unsurpassed beauty, rich in historical significance, and magnificently equipped to care for tourists, visitors and conventions. Bring the wife and children with you to give them a truly memorable experience.

Baltimore-Washington Branch
Convention Committee

Arthur G. Pierdon
General Chairman

K. M. Huston
Co-Chairman

Dr. William Blum
Honorary
Chairman

Convention Registration Information

(Eastern Daylight Saving Time)

Convention Registration in upper lobby on mezzanine floor, Hotel Statler.

Sunday, June 17	1:00 P.M. to 9:00 P.M.
Monday, June 18	9:00 A.M. to 5:00 P.M.
Monday, June 18	8:30 P.M. to 10:30 P.M.
Tuesday, June 19	9:00 A.M. to Noon
Wednesday, June 20	9:00 A.M. to 1:30 P.M.
Thursday, June 21	9:00 A.M. to Noon

The registration fee of $20.00 for men and women and $10.00 for children, 16 and under, provides each registrant with a book of tickets covering all events on each program.

Table reservations for the Banquet on Thursday, June 21, should be made in advance at the Banquet Reservation Desk in the upper lobby, starting Tuesday, June 19, at 9:00 A.M. Banquet tickets for children are not included in their registration ticket books. These may be purchased for $7.00 additional, with their registration. All events are scheduled at the Hotel Statler unless otherwise noted.

Convention Committee Chairmen

General Chairmen: Arthur G. Pierdon, *Art Metal Finishing Company*; Kenneth M. Huston, *Armco Steel Corporation*.
Honorary Chairman: Dr. William Blum.
Educational Program: Dr. Abner Brenner, *National Bureau of Standards*.
Convention Registration: Fielding Ogburn, *National Bureau of Standards*.
Banquet: Dr. Vernon A. Lamb, *National Bureau of Standards*.
Finance: Jules Horelick, *Allied Metal Finishing Company*.
Plant Visitation: Vincen J. Hughes, Jr., *Hughes Chemical Co.*
Transportation: T. R. Boggess, *Norfolk & Western R. R.*
Entertainment: Wendell P. Barrows, *Naval Gun Factory*.
Hotel: Asaf A. Benderly, *Diamond Ordnance Fuze Laboratories*.
Outing: William Metzger, Jr., *National Bureau of Standards*.
Publicity: Raymond Stricklen, Jr., *Allied Research Products Corp.*
Program: Carl H. Thiede, *Potomac Electrotype Co.*
Ladies: Mrs. Arthur G. Pierdon.

Dr. Allen V. Astin,
National Bureau of Standards,
Keynote Speaker

Jules Horelick,
President,
Baltimore-
Washington
Branch, A.E.S.

A.E.S. Officers . . .

Clyde Kelly
President

Dr. Samuel Heiman
First Vice President

Francis T. Eddy
Second Vice President

H. E. Head
Third Vice President

Dr. Ralph A. Schaefer
Past President

P. Peter Kovatis
Executive Secretary

Convention

Sunday, June 17

9:00 A.M.—National Association of Metal Finishers' Board of Directors Meeting, Mayflower Hotel.
10:00 A.M.—A.E.S. Executive Board Meeting, Massachusetts Room.
2:00 P. M.—Metal Finishing Suppliers' Association, Inc., Trustees' Meeting, California Room.
8:00 P. M.—A.E.S. Get Together Party, Federal and South American Rooms. Light refreshments.

Monday, June 18

10:00 A.M.—A.E.S. Opening Session and Keynote Address, Presidential Room.
11:00 A.M.—A.E.S. Business Meeting, Federal Room.
12:00 Noon—Metal Finishing Suppliers' Association, Luncheon and Meeting, South American Room.
12:00 Noon—Branch Secretaries' Luncheon, California Room.
12:00 Noon—Ladies' Luncheon, Willard Hotel.
12:15 P. M.—Speakers' Luncheon, Ohio Room.
2:00 P. M.—First Educational Session A, Presidential Room. Session B, Congressional Room.
2:00 P. M.—Ladies' Tour of Washington. F St. entrance, Willard Hotel.
2:00 P. M.—National Association of Metal Finishers, Fifth Management Seminar, Mayflower Hotel.
2:30 P. M.—Editorial Board Meeting, Massachusetts Room.
6:30 P. M.—National Association of Metal Finishers Cocktail Party and Banquet, Mayflower Hotel.
6:30 P. M.—Past Presidents Dinner, California Room.
9:00 P. M.—Open House, Presidential and Congressional Rooms. All registrants will be guests of the Metal Finishing Suppliers' Association. Refreshments and dancing. Buffet served at 10:30 P.M.

All events at Hotel Statler unless otherwise indicated.

Tuesday, June 19

8:00 A.M.—Research Committee Breakfast, Massachusetts Room.
8:00 A.M.—Speakers' Breakfast, Ohio Room.
8:30 A.M.—Sightseeing Tour B. Tickets at Registration Desk.
9:00 A.M.—Second Educational Session A, Presidential Room. Session B, Congressional Room.
12:00 Noon—Branch Librarians' Luncheon, California Room.
12:00 Noon—"Aunt Ella" Luncheon for Ladies. Sponsored by Oakite Products, Inc. David X. Clarin, Host. Terrace Room, National Airport.

Timetable

12:15 P. M.—Plant Tour, Western Electric Co.
1:00 P. M.—Annual Golf Tournament, Metal Finishing Suppliers' Association. Manor Country Club, Norbeck, Md.
1:25 P. M.—Plant Tour, National Bureau of Standards.
2:00 P. M.—Research Committee Meeting, Massachusetts Room.
2:00 P. M.—East-West Baseball Game, Diamond 25, 25th and Constitution Ave.
6:30 P. M.—Speakers' Dinner, New York Room.
8:00 P. M.—Third Educational Session A, Presidential Room. Session B, Congressional Room.

Wednesday, June 20

8:00 A.M.—Speakers' Breakfast, Ohio Room.
8:30 A.M.—Sightseeing Tour E. Tickets at Registration Desk.
9:00 A.M.—Fourth Educational Session A, Presidential Room. Session B, Congressional Room.
10:00 A.M.—A.E.S. Public Relations Task Committee, Massachusetts Room.
12:00 Noon—Michigan State Alumni Luncheon, California Room.
1:00 P. M.—Trip to Mt. Vernon. Busses leave from 16th Street entrance to hotel.
9:30 P. M.—A.E.S. Floor Show and Dance. Presidential and Congressional Rooms.

Thursday, June 21

8:00 A.M.—Speakers' Breakfast, Ohio Room.
9:00 A.M.—Fifth Educational Session A, Presidential Room. Session B, Congressional Room.
12:00 Noon—Ladies' Luncheon, sponsored by Udylite Corp. Talk by Dr. Richard B. Saltonstall. Mayflower Hotel.
12:40 P. M.—Plant Tour. Bureau of Engraving & Printing.
1:25 P. M.—Plant Tour. Potomac Electrotype Co. and Judd & Detweiler.
2:00 P. M.—Final A.E.S. Business Meeting, Federal Room.
2:00 P. M.—Ladies' Plato Party, Mayflower Hotel.
7:00 P. M.—Annual Banquet, Presidential and Congressional Rooms. Registration book ticket must be exchanged for a special Banquet ticket. Ticket exchange starts at 9:00 A.M. Tuesday, June 19, at Banquet Reservation Desk in upper lobby.

Oakite Products, Inc. David X. Clarin, Host. Terrace Room, National Airport.

Ladies' Program

Mary A. Pierdon

Welcome Ladies:

Washington, your capitol city awaits your coming. Much thought and planning have gone into our efforts to make it possible for you to have "A Capital Time with the A.E.S. in the Capitol of the U. S." at the 43rd Annual Convention.

Twenty-six years ago, in 1930, our branch was host to a wonderful convention group. Once again we cordially invite you to come to YOUR CITY to see and to learn first hand of the many historical and significant happenings, past and present, which make Washington world famous. A warm welcome awaits you!

THE LADIES' COMMITTEE

Mary A. Pierdon
Chairman

Sunday, June 17

8:00 P. M.—Get Together Party. Refreshments. Hotel Statler, Federal and South American Rooms.
Admission by ticket.

Monday, June 18

10:00 A.M.—Opening Session. Ladies, see your men off to a good start for a successful Convention! Hear Dr. Allen V. Astin of the National Bureau of Standards deliver the keynote address. Hotel Statler, Presidential Ballroom.

12:00 Noon—Luncheon. Meet with the Ladies' Committee for luncheon in the Grand Ballroom of Washington's most historic hotel—The Willard.
Admission by ticket.

change starts at 9:00 A.M. Tuesday, June 19, at Banquet Reservation Desk in upper lobby.

2:00 P. M.—Washington Tour. F Street Entrance—Willard Hotel. Bus Ticket in Ladies Book.

9:00 P. M.—Metal Finishing Suppliers' Association Open House. Fellowship, refreshments, and dancing. Buffet Supper at 10:30. Door Prizes. Hotel Statler, Presidential and Congressional Rooms.
Admission by ticket.

Tuesday, June 19

12:00 Noon—Luncheon. The Aunt Ella Society Luncheon, sponsored by Oakite Products, Inc., awaits you at the Terrace Dining Room, National Airport.
Admission by ticket.

Wednesday, June 20

1:00 P. M.—Trip to Mt. Vernon. Busses: 16th St. Entrance—Hotel Statler. See the Changing of the Guard at the Tomb of the Unknown Soldier, ride through Old Alexandria, visit Mt. Vernon, and enjoy a beautiful boat ride on the historic Potomac River. Use tickets as marked.

9:30 P. M.—Floor Show and Dance. Hotel Statler, Presidential and Congressional Rooms.
Admission by ticket.

Thursday, June 21

12:00 Noon—Luncheon. The Udylite Corporation entertains you in the Grand Ballroom of the elegant Mayflower Hotel. Dr. Richard Saltonstall will conduct the ladies' "Educational Session." He will discuss "What the Quality of Plating Means to You."
Admission by ticket.

2:00 P. M.—Plato Party. Mrs. Joan Wiarda, Hostess. Mayflower Hotel—Grand Ballroom.
Admission by ticket.
Before leaving you will receive:
1. Orchids from the Rapid Electric Company.
2. Ladies gift from the Baltimore-Washington Branch. Use tickets in book.

7:00 P. M.—Annual Banquet—Dancing. Hotel Statler—Presidential and Congressional Rooms. Prizes and awards will be made this evening.

The Washington Tour at 2:00 P.M. on Monday will give the

Ladies' Program (continued)

ladies an overall look at the beauties of Washington. Optional tours have been arranged.

1. Tuesday, June 19, 8:30 A.M. An optional sightseeing trip. Tour B, Interior of Public Buildings. Price $2.00. Tickets may be purchased at Registration Desk.
2. Wednesday, June 20, 8:30 A.M. An optional sightseeing trip. Tour E, Shrines and Cathedrals. Price $2.00. Tickets may be purchased at Registration Desk.

★ ★ ★ ★ ★

Where To Dine

Allies Inn. 1703 New York Ave., N.W. Fine self-service restaurant. Good food.

Allison's Little Tea House. 1301 S. Arlington Ridge Rd., Arlington, Va.

Arbaugh's. 2606 Connecticut Ave., N.W. Excellent spareribs, steaks and chops.

Ciro's. 1707 De Sales St., N.W. Good Italian food.

Colony Restaurant. 1737 De Sales St., N.W. Excellent food.

Hogate's Sea Food Restaurant. 9th & Maine Ave., S.W., overlooking the Potomac River. Excellent cuisine, noted for seafood.

LaSalle du Bois. 1800 M St., N.W. A fine French restaurant, noted for a large choice in good foods.

Longchamps Restaurant. New York Ave. at 14th St., N.W. Prime roast beef, choice steaks and chops, lamb stew and trout are among the house specialties.

Mrs. K's Toll House Tavern. 9201 Colesville Rd., 1 mile east of Silver Spring, Md., on U.S. 29. An old toll house converted into a charming spot. One of the finest dining places in the Washington area. Reservations advised.

Occidental Restaurant. Pennsylvania Ave. between 14th and 15th Sts., N.W. One of the city's traditional fine dining places. Fine sea food, broiled lobster and steaks.

Olmsted's Restaurant. 1336 G St., N.W. Well known—one of Washington's oldest eating places. Filet mignon, charcoal-broiled steaks, chops, roast beef, sea food, chicken, turkey and duck regularly on the menu.

Pierre Restaurant. Connecticut Ave. at Q St., N.W. An outstanding French restaurant, specializing in Lobster a la Newburg. Fine wine list.

Water Gate Inn. 2700 F St., N.W. Overlooking the Potomac River. Open every day from 11:30 A.M. to 10 P.M. Specializing in Pennsylvania Dutch dishes. Complete bar and cocktail lounge.

823 Restaurant. 823 Fifteenth St., N.W. Old European atmosphere, German food.

Haussner's Restaurant. Eastern Ave. and Clinton St., Baltimore, Md. Maryland sea-food delicacies.

Metal Finishing Suppliers' Association

The Metal Finishing Suppliers' Association, Inc., an organization of manufacturers and distributors of plating supplies, both on a national and a local level, continues to make an important contribution to the social side of A.E.S. conventions. The M.F.S.A. cooperates fully with the host branch committee for each national convention, appointing one of its members to serve as liaison representative. This year the M.F.S.A. member working in cooperation with the Baltimore-Washington Branch is J. J. Duffy, Jr., of the Pennsylvania Salt Manufacturing Co.

The principal event sponsored by M.F.S.A. is the Open House to be held this year for all members and guests of the A.E.S. on Monday evening at the Hotel Statler. This full evening of entertainment, including dancing, a buffet, and refreshments, is extended to the A.E.S. with the compliments of the supplier organizations.

J. J. Duffy, Jr., in his dual capacity as liaison representative and golf chairman, has scheduled the M.F.S.A. Annual Golf Tournament for Tuesday at the Manor Country Club, Norbeck, Maryland. Full information concerning the tournament may be obtained at the A.E.S. registration desk. Entries for the tournament may be made on Sunday and Monday at the registration desk. There will be prizes for both skilled and lucky golfers.

Board of Trustees, Metal Finishing Suppliers' Association, Inc.

Herman J. Struckhoff, president, Laco Engineering & Sales, Inc., Los Angeles, Calif.
J. J. Duffy, Jr., first vice president, Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
M. M. Beckwith, second vice president, The Harshaw Chemical Co., Cleveland, Ohio
E. W. Couch, third vice president, The Lea Mfg. Co., Waterbury, Conn.
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James L. Clifford, The Udylite Corp., Detroit, Michigan.
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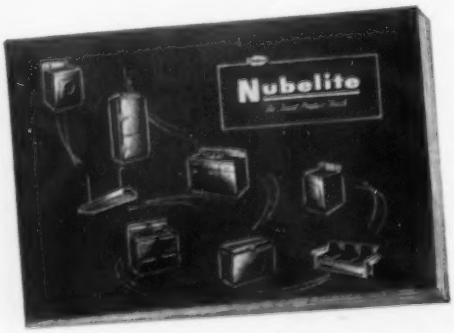
FINISHES

formulated to meet the service requirements of your products!

NUBELITE finish coatings are custom-made in Glidden laboratories to provide the specific combination of resistance factors and film properties required for improved product service life. That's why a white or colored NUBELITE finish on your product is positive assurance of lifetime beauty and protection.

All Glidden primers and enamels, to produce either smooth or textured coatings on any metal, are adaptable to present finishing methods and equipment. Write for complete finishing data plus information on Color Consultation and other Glidden services which are available without cost or obligation.



Address Dept. PR-656 (company letterhead, please), for your copy of this attractive, informative book which completely describes NUBELITE uses and applications.

1. impact and abrasion resistance
2. color and gloss retention
3. heat, alkali and corrosion resistance
4. moisture and corrosion resistance
5. heat and grease resistance
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Educational Program

FIRST SESSION (Dual) Session A

Monday, June 18, 2:00 P.M.
Moderator: Dr. E. R. Bowerman, Jr.,
Sylvania Electric Products, Inc.

1 — "Some Recent Developments in Selective, Localized Plating for Engineering Purposes."

By Marv Rubinstein, Marlane Development Co., Inc. New York 10, N. Y.

The operation formerly known as "brush" or "touch-up" plating has recently undergone a complete revolution. Primarily the paper covers techniques of operations including a description of a variety of engineering applications. The metallurgical properties of deposits also receive attention.

2 — "Investigation and Evaluation of Plating Processes and Plating Combinations for Use on Etched Circuitry."

By E. H. Babcock, R. K. Stephens, R. C. Grimsinger, Convair, Division of General Dynamics Corp., Pomona, Calif.

This work covers the various processes, plating baths, and plate combinations proposed for use on etched circuitry fabricated from one and two side copper laminate glass epoxy board.

3 — "Overlay Plating of Steel Back—Aluminum Lined Sleeve Bearings."

By A. H. Beebe, Jr., B. F. Rothschild and G. J. LeBrasse, Federal-Mogul Division, Research and Development, Federal-Mogul-Bower Bearings, Inc., Ann Arbor, Mich.

One of the newer products in the sleeve bearing industry is the steel back—aluminum alloy lined bearing. This paper describes a method for electrodepositing a lead alloy overlay.

Dr. Abner Brenner
Educational
Chairman

4 — "The Protection of Molybdenum Against High Temperature Oxidation."
By Julius J. Harwood, Head, Metallurgy Branch, Office of Naval Research, Dept. of Navy, Washington, D. C.
This paper reviews the problem of molybdenum oxidation and attempts to summarize the research programs which have been underway for the development of protective coatings.

FIRST SESSION (Dual) Session B

Monday, June 18, 2:00 P.M.

Moderator: Dr. R. B. Saltonstall, The Udylite Corp.

1 — "Gaging Thin Nickel Coatings by X-Ray Fluorescence."
By K. G. Carroll and W. W. Sellers, International Nickel Company, Inc., New York, N. Y.
Electrodeposited nickel coatings ranging in thickness from 10 to 200 microinches may be accurately measured by means of characteristic X-rays generated in the coating. Suitable X-ray apparatus is described, and optimum conditions for X-ray excitation, dispersion, and detection are discussed. The nondestructive character of the measurements is important.

2 — "Coating Thickness Measurement by Filtered X-Fay Fluorescence."
By Dr. Earl J. Serfass and Dr. Fred A. Achey, Department of Chemistry, Lehigh University, Bethlehem, Pa.
Using X-ray fluorescence methods, thickness of thin coatings can be determined by measuring either excitation of the substrate or the coating layer. The use of filters to measure characteristic X-ray fluorescence radiation is suggested as a method for quantitatively determining the thickness of thin coatings. The method involves excitation of both the coating and sub-

strate with an incident X-ray beam, and subsequent measurement of only fluorescence from the coating. Easily prepared filters replace the usual collimator-crystal procedures.

3 — "Current Distribution of Microprofiles."

By Dr. D. Gardner Foulke and Dr. Otto Kardos, Hanson-Van Winkle-Munning Company, Matawan, N. J.

The characteristic dimensions of microprofiles are relatively small with respect to: (1) The product of the specific conductivity and the slope of the polarization curve. (2) The "effective thickness" of the diffusion layer. Criterion 1 alone would lead to uniform current distribution on microprofiles under most conditions. Criterion 2, however, serves to explain both leveling and microthrow as it implies that the "effective thickness" of the diffusion layer is smaller for the peak than for the recess. New experimental data are presented.

4 — "Leveling—Definition, Measurement, and Understanding."

By J. D. Thomas, General Motors Corp., Detroit, Mich.

Leveling is defined. The bases for plating are electroforms of standard ruled specimens in which the spacing, depth, and angle of rulings were varied in a controlled manner. The degree of leveling on the plated samples was studied by means of the Surfagage, Tallysurf, interference microscope, and by cross-sectioning. Experimental data show that organic addition agent combinations primarily, influence the leveling characteristics of bright nickel plating baths. Possible explanations of the mechanism of leveling are discussed.

SECOND SESSION (Dual) Session A

Tuesday, June 19, 9:00 A.M.

Moderator: J. Teres, Wright Air Development Center

1 — "Properties of Electrodeposits at Elevated Temperatures."

By W. H. Safranek and G. R. Schaer, Battelle Memorial Institute, Columbus, Ohio.

Elevated temperature properties including oxidation resistance in air and molybdenum oxide, stress rupture, thermal expansion, thermal stability, ductility, and hot hardness were determined for nickel, chromium, and other electrodeposits. The results of the research showed promising leads for developing improved electrodeposits for protecting molybdenum and other metals against oxidation at high temperatures.

2 — "Limitations of Plated Nickel in Jet Engine Design."

By R. W. Moeller and W. A. Snell, Pratt and Whitney Aircraft Co., East Hartford 8, Conn.

This paper presents in graphic form some of the factors which

restrict the use of plated nickel on highly stressed jet engine parts. Residual stress vs. temperature, residual stress vs. fatigue life, plate thickness vs. corrosion resistance and production control variations are discussed, showing the limitations of nickel plated from the Watts' type, sulfamate, and electroless nickel solutions.

3 — "Some Characteristics of Electroformed Iron Deposits."

By Dr. A. M. Max, RCA Victor Record Division, Indianapolis, Ind., and Dr. G. R. Van Houten, P. R. Mallory and Co., Indianapolis, Ind.

Deposits from a typical iron chloride electroforming solution are investigated under a wide variety of deposition and solution variables. Cathode efficiency, deposit stress, tensile strength, and ductility as well as pitting are correlated with temperature, current density, acidity, ferric ion concentration and agitation. The importance of temperature is demonstrated and related to deposit stress.

4 — "A Study of the Effect of Several Organic Addition Agents on the Hardness and Residual Stress in Nickel Deposits."

By I. L. Newell, Henry Souther Engineering Co., Hartford, Conn.

The sulfamate formulation for Ni deposits was chosen to be modified with several organic addition agents to increase the hardness and produce a compressively stressed electrodeposit. Three organic addition agents were chosen for test: saccharin, paratoluene sulfonamide and naphthalene 1, 3, 6 trisulfonic acid. The results obtained show a correlation between the temperature, current density, stress and hardness with varying amounts of the addition agent.

SECOND SESSION (Dual) Session B

Tuesday, June 19, 9:00 A.M.

Moderator: Dr. Earl J. Serfass, Lehigh University

1 — "Spectrochemical Determination of Nickel in Bright Cadmium Plating Solutions."

By Henry R. Friedberg, Metal Finishing Consultant, and Morton L. Levy, Laboratory Manager, Crobaugh Laboratories, Cleveland, Ohio.

In the control of brightener additions to cadmium plating solutions it is important to determine the amount of nickel present in the bath. The relatively small amounts of nickel make the use of spectrochemical techniques attractive for speed, convenience, and accuracy. This paper describes the method selected and includes experimental data and analytical curves. A procedure for the preparation of standards is given.

Educational Program (continued)

2 — "Complete Polarographic Analysis of Cyanide Zinc Plating Baths."
By T. H. Collard, Jr., and David K. H. Liu, Friedrich Refrigerators, Inc., San Antonio, Texas.

A brief review of polarographic methods used, to date, in cyanide zinc plating bath analyses is given. This new polarograph, based upon certain assumptions and using a modified, simpler and less expensive polarographic circuit, makes possible the determination of zinc, total sodium cyanide, caustic soda, and sodium carbonate.

3 — "Construction and Operating Characteristics of a New Electroplating Cell for Current Density Studies."
By R. F. Walton, Radio Corporation of America, Harrison, N. J., and R. Gilmont, Manostat Corporation, New York, N. Y.

A new type of electroplating cell, the "Hyperbolic Electroplating Cell" was developed. The hyperbolic cell was designed and constructed to conform to a predetermined geometrical pattern. Cell calibration curves were experimentally developed which help to establish a simple mathematical formula expressing the linear relationship between primary current density and distance measured along the cathode of the cell.

4 — "Rapid Analysis of Cyanide Plating Baths."
By Dr. R. F. Muraca, Jet Propulsion Laboratories, California Institute of Technology.

The development of a simple procedure for analyzing plating baths is described. The analysis can be carried out in the plating shop within 10 minutes. The apparatus necessary for the analysis can be constructed by any machine shop and can be calibrated in the plating shop. The required reagents are generally available in the plating shop or can be purchased locally; furthermore, the concentrations of the reagents used in the analysis are not critical.

5 — "The Polarographic Determination of Cadmium and Cyanide in Alkaline Cadmium Plating Solutions."
By G. T. Forsyth, The Udylite Research Corp., Van Dyke, Mich.

A rapid polarographic method for the determination of cadmium and total cyanide in cadmium plating solutions is presented. Both cadmium and total cyanide can be determined in 10 to 15 minutes. Data comparing results obtained using the method described and a conventional method of analysis is given together with the required calibration curves and a sample polarogram.

THIRD SESSION (Dual) Session A

Tuesday, June 19, 8:00 P.M.
Moderator: L. F. Scott, Metal & Thermit Corp.

1 — "Coated Abrasive Belts Speed Metal Working Production."
By E. E. Oathoat, Behr-Manning, Div. of The Norton Company, Troy, N. Y.
A motion picture designed to show advantages offered by coated abrasive belts. Describes machinery for production finishing.

2 — "Filter Media."
By Q. O. Shockley, M. L. Whitehurst, Elmer Lundberg, and John Hood, Indianapolis Branch, American Electroplaters' Society.
The object of this paper is to collect and classify available information on filter media and present it as an aid in the selection of filter media for specific uses.

3 — "Tank Linings."
By Kenneth G. Le Fevre, Metalweld, Inc., Philadelphia, Pa.
The paper begins with a general discussion of the lining and coating materials that have been used in pickling and plating tanks. Various coating and lining materials are covered including the more recent "Combination Coatings." Insofar as possible, the economics of various types, along with practical considerations such as repairs are discussed.

4 — "Plating Room Tank Ventilation Equipment."
By F. W. Arndt, Chief Engineer, Heil Process Equipment Corp., Cleveland, Ohio.
A brief discussion of the most important considerations for determining the exhaust volumes required for typical plating tanks. With this as a basis, the paper is divided into five topics, each being discussed mostly from a practical viewpoint: A) Hoods, B) Ducts, C) Fans, D) Fume Scrubbers, E) Stacks.

THIRD SESSION (Dual) Session B

Tuesday, June 19, 8:00 P.M.
Moderator: C. H. Sample, International Nickel Co., Inc.

1 — "The Radiographic Detection of Pores in Plated Coatings."
By Fielding Ogburn and Margaret Hilkert, National Bureau of Standards, Washington, D. C.
Techniques for making radiographs of metal coatings plated adherently on steel or on a radioactive basis metal are described. Either a radioactive metal or an X-ray machine may be used as the radiation source. Means of greatly improving sensitivity by use of microradiography are indicated.

Educational Program (continued)

2 — "The Permeation of Gases Through Electrolytic Nickel Deposits as Affected by Accelerated Corrosion."

By Dr. J. Martin Tobin, General Electric Corp., Schenectady, N. Y., and Dr. D. Gardner Foulke, Hanson-Van Winkle-Munning Company, Matawan, N. J.

A method for measuring the permeability of electrolytic nickel foils to gases and the "intrinsic" permeability of various nickel deposits as well as wrought nickel. Data on the initial permeability of nickel-chromium foils is reported. Induced permeability after corrosion in 10 per cent sulfuric acid is also reported as are the results of a study of effect of electrolytic corrosion, according to the Pinner-Pierce method.

3 — "Effect of Impurities and Purification of Electroplating Solutions 1. Nickel Solutions."

9. The Effects and Removal of Aluminum (AES Project 5)

By Dr. D. T. Ewing and Dr. A. J. Smith, Michigan State University, Lansing, Mich., and Dr. W. O. Dow, Jr., Sunbeam Corporation, Chicago, Ill.

The effects of aluminum on the appearance, adhesion, ductility, salt spray corrosion resistance, hardness and throwing power of electrodeposited nickel were studied. Low and high pH Watts solutions were studied for effects on gray nickel deposits, organic and nickel-cobalt solutions for bright deposits.

4 — "Effect of Impurities and Purification of Electroplating Solutions 1. Nickel Solutions."

10. The Effects and Removal of Manganese.

By Dr. A. J. Smith, Michigan State University, Lansing, Mich., and Dr. R. J. Rowe, Dow Chemical Co., Midland, Mich.

The effects of manganese in solution on the physical properties of electrodeposited nickel were studied. As in previous work, solutions employed were 2.2 and 5.2 pH Watts organic, and nickel-cobalt. Concentrations up to 300 mg/l. showed no significant effect on any of the properties. Removal of manganese cannot be effected by either low current density electrolysis or high pH treatments.

5 — "Progress Report on Accelerated Corrosion Tests for the Performance of Plated Coatings."

(AES Research Project 15)

By W. L. Pinner, Houdaille Industries, Inc., Detroit, Mich.

The third report of the Project 15 Committee reports on continuing work directed toward producing a dependable, repro-

ducible corrosion test for plated coatings. The report considers the intensified effort which has been expended on two tests selected from those listed in the last report. These tests give promise of being successful in their application.

FOURTH SESSION (Dual) Session A

Wednesday, June 20, 9:00 A.M.
Moderator: Dr. W. A. Wesley,
International Nickel Co., Inc.

1 — "Electrodeposition of Porous Nickel-Cadmium Alloy."
By L. D. McGraw, J. P. Spenard, and Dr. C. L. Faust, Battelle Memorial Institute, Columbus, Ohio.
Porous nickel-cadmium alloy plate was deposited from a sulfate-chloride bath. Porosity as high as 30 to 50 per cent was induced by a colloidal addition agent. Gelatin was added to control stress and nodulation up to thickness of about 0.015 inch. Plate composition can be controlled up to 5 per cent cadmium.

2 — "Gold-Silver Alloy Plating."
By Dr. R. E. Harr and A. G. Cafferty, Western Electric Co., Inc., Chicago, Ill.
This report covers investigations of gold-silver alloy plating from a cyanide type solution. The investigation was conducted to develop a set of conditions which would produce an 8 per cent silver-gold alloy. Several sets of conditions which yield such an alloy are given.

3 — "Nickel-Iron Alloy Deposits for Magnetic Shielding."
By V. P. McConnell and Dr. I. W. Wolf, General Electric Co., Syracuse, N. Y.
This paper covers the development of nickel-iron deposits to obtain thicknesses of plate from 0.003 inch to 0.025 inch. The effects of metal ion concentration and the conditions necessary to arrive at a deposit of the greatest initial permeability are listed. The effects of organic addition agents to reduce brittleness are also discussed.

4 — "Improved Techniques for Electroless Nickel Plating on Non-conductors."
By Dr. Harold Narcus, President and Technical Director, Electrochemical Industries, Inc., Worcester 3, Mass.
New and improved techniques for depositing electroless nickel coatings on non-conductors, specifically ceramics, glass and plastics. More rapid and complete coverage of the non-conductive surface and greater adhesion of the nickel deposit to that surface result from employment of "de-polarizing," "sensitizing" and "activating" techniques, which have been evaluated fully in many industries.

FOURTH SESSION (Dual) Session B

Wednesday, June 20, 9:00 A.M.

Moderator: G. A. Lux, Oakite Products, Inc.

1 — "Study of Phosphate Treatments for Metals."

By Lloyd Gilbert, Rock Island Arsenal, Rock Island, Ill.

This paper covers the actual formulation of phosphate coating chemicals and functions of individual components of the bath. The erratic corrosion behavior of the phosphate coatings is explained. A theory concerning the proper approach to improving quality of phosphate coatings is presented.

2 — "Organic Finishes on Plated Products."

By Gene L. Leithauser, Research Staff, General Motors Corporation, Detroit, Mich.

This report covers factors affecting the adhesion of organic finishes to plated parts. These include plating procedures as well as post-plating procedures that influence the durability of the organic finish. Pre-paint methods, chemical treatments on chromium plate, and use of primers are covered. Durability of pigmented and clear finishes over plated parts are also discussed. Evaluation methods and results of surveys of durability are included.

3 — "Some Notes on the Electrodeposition of Antimony."

By A. H. Du Rose, Harshaw Chemical Co., Cleveland, Ohio.

The results reported are a summary of an experimental survey made to determine the properties of electrodeposited antimony. The outstanding property of antimony is its lack of ductility or cohesive strength. In spite of this, good but not consistently reproducible corrosion protection was obtained. There appears to be some relation between adhesion and the respective orientations of the substrate and deposit.

4 — "A Tool for Decision—Acceptance Sampling by Variables and How It Works."

By Roger H. Moore, Los Alamos Scientific Laboratory, Los Alamos, New Mexico.

This paper describes acceptance sampling by variables, a set of rules for deciding whether or not a lot of production pieces is acceptable under specification limits. The effectiveness of the set of rules is measured by the shape of an operating characteristic curve, which gives the probability of accepting a lot if it has a certain proportion of defective parts in it.

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MONDAY, JUNE 18
4:00 p.m. to 9:00 p.m.
COCKTAILS

TUESDAY, JUNE 19
4:00 p.m. to 7:00 p.m.
COCKTAILS
9:00 p.m. to Midnight
COFFEE AT 10 p.m.

WEDNESDAY, JUNE 20
6:00 p.m. to 10:00 p.m.
COCKTAILS

THURSDAY, JUNE 21
4:00 p.m. to 7:00 p.m.
COCKTAILS
11:00 p.m. to 1:00 a.m.
COFFEE AND SANDWICHES
AT MIDNIGHT

THE *Udylite* CORPORATION

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FIFTH SESSION (Dual) Session A

Thursday, June 21, 9:00 A.M.

Moderator: Arthur W. Logozzo, Nutmeg Chrome Corp.

1 — "Chromium Plating of Gun Bores."

By V. A. Lamb and J. P. Young, National Bureau of Standards, Washington, D. C.

This paper describes the history of gun barrel plating prior to World War II, and since that period. The physical and chemical properties required of a gun bore coating are outlined, and the degree to which chromium and other metals meet these requirements is indicated. Methods for applying chromium electrodeposits to gun bores are described. Electropolishing of gun bores is also described.

2 — "The Adhesion of Electroplated Coatings to Titanium."

By C. Stanley and Dr. Abner Brenner, National Bureau of Standards, Washington, D. C.

Good adhesion of electrodeposited coatings to titanium is prevented by an oxide film. A pretreatment for circumventing this difficulty was developed which involved the formation of a titanium fluoride coating by an electrolytic treatment in a solution of hydrofluoric and acetic acids.

3 — "Hard Chrome Plating of Titanium Alloys."

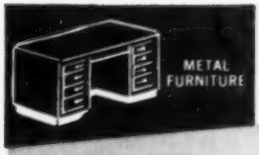
By L. Missel, Lockheed Aircraft Corporation, Burbank, Calif.

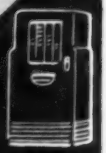
Highly adherent chromium has been applied to several titanium alloys by electroplating. The process consists of an immersion treatment in a simple aqueous bath followed by plating in a conventional sulfate bath. A simple semi-quantitative plate adhesion-bearing property evaluation test has been developed.

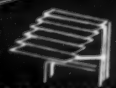
4 — "Electroplating Chromium on Unusual Alloys."

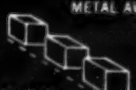
By Charles Levy, Watertown Arsenal, Watertown, Mass.

By variations in pretreatments, chromium has been electrodeposited from a conventional bath on some unusual alloys. Included among the basis metals were high-cobalt alloys, such as Stellite 21, S-816 and V-36; high nickel alloys, such as Hastalloy B, Hastalloy C and Inconel X; molybdenum; and stainless steels, such as 502 and 19-9DL. Chromium plated AISI 4340 steel was used for comparison purposes. A nickel chloride-hydrochloric acid electrolytic treatment applied prior to chromium plating was the principal means by which sound deposits with good adhesion were achieved.









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FIFTH SESSION (Dual) Session B

Thursday, June 21, 9:00 A.M.
Moderator: Dr. William Blum

1 — "A New Organo-Aluminum Chloride Bath for Deposition of Aluminum."
By Dr. Nelson F. Murphy and Dr. Arthur C. Doumas,
Virginia Polytechnic Institute, Blacksburg, Va.
A new electrolyte for the deposition of aluminum, consisting of a solution of aluminum chloride in ether and substituted amine is described. Operating conditions are described. The deposits are adherent, can be made of considerable thickness and may be polished. Bright deposits have been obtained from the bath at high current densities.

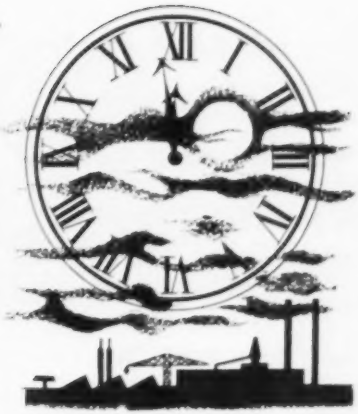
2 — "The Growth and Properties of Metal Whiskers."
By S. M. Arnold, Bell Telephone Laboratories, Inc.,
Murray Hill, N. J.
An account of studies at Bell Telephone Laboratories following the discovery that failure of certain electrical equipment was a result of the presence on a metal surface of a number of microscopic filaments. The filaments or "whiskers" were found to be metal single crystals possessing unique properties. These unusual properties are attributed to a perfection of structure not found in bulk material, and hence are of interest in fundamental studies of the metallic state.

3 — "Study of Adhesion by the High Speed Rotor Technique."
By Dr. J. W. Beams, Department of Physics,
University of Virginia, University, Va.
If films of a material are uniformly deposited on the peripheries of cylindrical rotors having different radii and the rotor speeds are increased until the material is thrown off, both the tensile strength and the adhesion to the rotor surface of the material may be determined. If the material is deposited on a rotor in circumferentially disconnected patches, the absolute value of the adhesion can be obtained directly. The technique of spinning magnetically suspended rotors in a vacuum is described and its application to the measurement of the adhesion of electrodeposited and evaporated metals on rotor surfaces is discussed.

4 — "Dissolved Gases in Plating Baths."
By W. M. Tucker and F. O. Beuckman, Eastman Kodak Co.,
Rochester 4, N. Y.
It was found that a Watts nickel bath in good operating condition, when properly degassed, would yield pit-free deposits until it became saturated with a gas or gases at the temperature of operation. Using the Van Slyke Blood-Gas apparatus, equilibrium studies indicate the limits of this approach and confirm the conditions which produce pit-free deposits.

DEADLINE—MIDNIGHT

How Quick Service Paid Off For One Of The Nation's Leading Vitamin Producers



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National Association of Metal Finishers

Fifth Management Seminar

Monday, June 18, 2:00 P.M.

Mayflower Hotel

Moderator: John Palik, Jr.
President, N.A.M.F.

John Palik, Jr.

1 — "Waste Water Treatment—a Case History."
By William Acks, assistant general manager, Bechtel-McLaughlin Corp., Sandusky, Ohio.

2 — "Labor Relations Problems."
By Robert L. Giesel, president, Adolph Plating, Inc., Chicago, Ill.

3 — "Work Simplification for the Job Shop."
By S. J. Fecht, president, S. J. Fecht & Associates, New York and Chicago.

4 — "General Shop Operating Problems."
By Silvio C. Taormina, director, Platers Technical Service, New York and Chicago, and technical advisor to the N.A.M.F.

Registration fee for the seminar, including cocktails and dinner at 6:30 P.M., Mayflower Hotel, is $10.00.

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Aluminum
anodizing, buffing and cleaning

No matter what your aluminum finishing problem or need, you'll find the answer at H-VW-M . . . because it is the one company combining a complete engineering service with a complete line of equipment and supplies!

ELECTRICAL EQUIPMENT — Want the best possible recommendation of a Rectifier . . . Generator . . . or Control Equipment for your particular operations? Page 2 tells how to get it.

STILL TANK OR FULL AUTOMATIC EQUIPMENT — Whatever your need — from a single component to a complete, integrated system — H-VW-M supplies it . . . Page 3.

ENGINEERING SERVICE AND INSTALLATION — H-VW-M engineers and technicians are anodizing equipment specialists, with years of experience. Page 3 tells why these H-VW-M services mean greater efficiency and savings in your plant.

ALUMINUM FINISHING SUPPLIES — Page 4 shows how H-VW-M research has resulted in new compounds, improved buffs and cleaners to make aluminum finishing easier, better.

HANSON-VAN WINKLE-MUNNING COMPANY

MATAWAN, NEW JERSEY

Manufacturers of a complete line of electroplating and polishing processes, equipment and supplies

Plants: Matawan, New Jersey • Grand Rapids, Michigan

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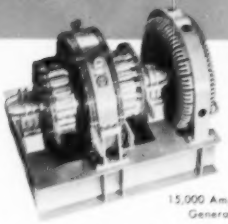
These H-VW-M Anodizing and Finishing to New Savings, New Efficiency, New

ELECTRICAL EQUIPMENT

H-VW-M is the only manufacturer of both Germanium and Selenium Rectifiers *and* low voltage, direct current Motor Generator Sets for the metal finishing industry. This thorough experience in every phase of low voltage power generation and rectification means that when you bring your power problems to H-VW-M you're sure to get the perfect equipment recommendation.



15,000 Ampere, 6 Volt Generator Unit

Automatic Anodizing Control Panel

Generators . . . and Controls

H-VW-M Motor Generators designed especially for metal finishing operations are built in sizes up to 50,000 amperes, and accessory equipment includes a full line of controls and control panels to cover any desired control function. Easy-to-maintain H-VW-M Motor Generators have exceptionally rugged and practical construction features insuring maximum performance and life. Standard voltage ratings range from 6 to 50 volts, and include the 18 and 24 volt units usually required for sulphuric acid anodizing, plus the 40 and 50 volt units used in chromic acid anodizing. Write today for 24-page Bulletin G-103, covering in detail all H-VW-M Generators.

Germanium and Selenium Rectifiers . . . Rectifier Controls

Self-Contained Rectifier with Tap Switch Control

Remote Controlled Rectifier with Tap Switch Control

Highest quality and efficiency, flexibility, economy and low maintenance are the characteristics combined in H-VW-M's full line of both Germanium and Selenium Rectifiers. 6 to 48 volt units—both remote and self-contained—provide the exacting low-voltage, high-current rectification required in aluminum anodizing. The widest possible choice of controls and control combinations is available. Such devices as manual or motor operated tap switch controls, continuously variable auto-transformers and saturable core reactors are used with or without supplemental controls to provide automatic voltage stabilization, automatic current stabilization as well as automatic programming.

Write for Bulletin ER-108, which gives further information about Rectifiers and Controls, plus useful control application suggestions.

Manual Tap Switch Control

Saturable Core Reactor

Continuously Variable Auto-Transformer

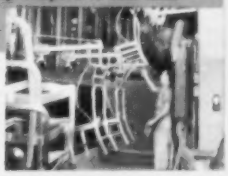
Motor Operated Tap Switch Control

Supplies, Equipment and Services Add Up Simplicity of Operation in Your Plant

PROCESSING EQUIPMENT

Whatever your anodizing procedure, there's an H-VW-M Full Automatic Conveyor that can be adapted to any production application requiring automatic cycling of individual treatments—or an H-VW-M Tank with accessory equipment that is perfectly adapted to still tank methods of any kind.

Workman "dials" desired cycle in refrigerator plant. Parts will by-pass or lower into baths as dial setting dictates.



With H-VW-M automatic anodizing system, 1 man in furniture company does work of 12.

Full Automatic Conveyors

H-VW-M was the pioneer in the development of full automatic conveyors for use in electroplating and other electrolytic processes. Over the years H-VW-M's close association with production problems in plating rooms across the nation has resulted in scores of innovations and improvements which have contributed substantially to the steady advance of metal finishing techniques.

Full automatic conveyors as used in anodizing operations have been an important concern at H-VW-M for years. One special development of particular interest in aluminum anodizing is H-VW-M's unique selective by-pass mechanism. With this device a whole rainbow of colors can be anodized in one continuous operation, and in any sequence. Length of treatment time can be varied for each individual conveyor arm, consistent with the overall cycle. These features bring a new kind of versatility to anodizing operations. Different products requiring different anodizing cycles may be processed at the same time, using the same equipment. In terms of efficiency, labor savings and increased production, this unusual device is truly revolutionary.

Featured in anodizing system for massive building panels are special 30-ft. tanks. Entire system H-VW-M designed, installed.

It is just one among many types of conveyors and equipment offered to aluminum finishers. Return-type conveyors . . . elevator conveyors . . . high-lift conveyors . . . straight-line conveyors . . . and others, all are designed, manufactured and installed by H-VW-M. Write for Bulletin FA-105, which fully describes all types.

Tanks and Equipment

At H-VW-M – the plating and anodizing industry's workshop—you'll find tank equipment for every phase of your work. For chromic acid anodizing, H-VW-M double electric welded unlined steel tanks are offered, along with steel coil equipment for cooling and heating. The entire system is H-VW-M designed, supplied and installed. For sulphuric acid anodizing, lead-lined steel tanks, plus the necessary cooling coils and air agitation assembly, are supplied. Tanks are fabricated from hot rolled steel, stainless steel, and aluminum. Other types of tanks are also available. Bulletin No. T-108 gives full particulars about this important H-VW-M equipment. Every conceivable type of auxiliary equipment is engineered and supplied, according to customers specifications, including a complete packaged refrigeration system for anodizing solutions.

And H-VW-M's Engineering and Installation Service

Anodizing problems of *any* kind? H-VW-M is prepared to set up your entire anodizing system from beginning to end—a system made up of components scientifically engineered to work together with utmost efficiency. Because of this, and because of H-VW-M's continuing research and development in every aspect of the anodizing picture, you can be confident that the recommendation you receive from H-VW-M is the very *best*.

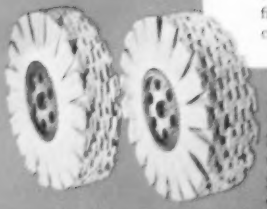
What's more, if requested, H-VW-M sees to it that the equipment you buy is H-VW-M *installed*. This means perfect, efficient operation from the start.

Add to this the fact that an H-VW-M technical representative—ready to serve you—is no further than your telephone. These representatives serve in principal cities across the nation. Get to know the one nearest you. He can help you get the most from your aluminum finishing equipment and supplies.

TURN THE PAGE FOR ALUMINUM BUFFING AND CLEANING SUPPLIES

ALUMINUM BUFFING AND CLEANING SUPPLIES

Since aluminum came into its own after World War II, considerable H-VW-M research and development work has been devoted to the perfection of buffs and compounds suiting the unique physical characteristics of this popular light metal. When long-wearing H-VW-M Buffs are used in conjunction with H-VW-M compounds especially formulated for aluminum finishing, you have the perfectly balanced combination for economy, efficiency and quality performance.



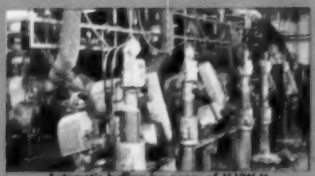
Buffs

Nowhere will you find a wider selection of the buffs you need for preanodizing operations than at H-VW-M. Whether you're looking for a super-heavy-duty buff like new steel-centered Ruff-L-Buffs (which are available untreated, or Binderized® for extra long wear) medium duty buffs like Triplex Buffs, or a buff for medium-to-light service such as the Full Disc Buff, you need look no further than H-VW-M. The full H-VW-M line also includes new Tufta-Flex Buffs (cloth tufts) and Sisal-Flex Buffs (with sisal-centered tufts), plus specialty buffs of every variety.

Among this array you'll find the exact buffs for your aluminum finishing needs. Every one is characterized by first quality, uniform new material of close weave and good weight . . . tight sewing with heavy thread . . . and proper balance. Write for 12 page Bulletin B-103, which describes H-VW-M's entire buff line.

Compounds

Hand buffing using H-VW-M buffs, compounds.



Automatic buffing by means of H-VW-M Liquimatic System.

For heavy duty cutting, H-VW-M Liquid Tripoli Compounds 303 and 420 were developed, and are now widely used in the cooking utensil industry. For the appliance, storm window, construction materials and automotive fields, H-VW-M's new Liquimatic Liquid Compound No. 728 has proved especially successful, giving excellent cut, while leaving the surface with deep, high color.

H-VW-M Bar Compounds also find broad use in aluminum finishing. A variety of tripoli bar compounds are offered in varying consistencies to meet all cutting requirements. For cut and color, special white compounds are available. And for high color, several new H-VW-M aluminum oxide compounds—No.'s 6B 168, 6B 72 and 8390—give unusually good results. Write for Bulletin CO-103.

Cleaners

H-VW-M devotes constant research to the subject of cleaners in its search for ever better products in the aluminum finishing field.

Matawan Cleaners are designed specifically to give superior results in soak cleaning, power spray operations, oxide removal, and for special aluminum cleaning and etching operations. Of particular interest is H-VW-M's 85S Cleaner, which prevents scale formation, thus keeping coil and tank walls scale free. This unusual aluminum cleaner leaves an extremely bright surface, and, because of its built-in regenerator, makes maximum effective use of caustic in the bath.

In line with its desire to supply the exact cleaner for the job, H-VW-M offers its extensive laboratory facilities where circumstances demand a special cleaner.

When you think of aluminum finishing equipment and supplies—think of H-VW-M first. Buying from one dependable source . . . H-VW-M . . . means one company assumes full responsibility—your guarantee that you're getting the best . . . in products . . . in performance, in *extra* service.

PLATEMANSHIP

Your H-VW-M combination of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

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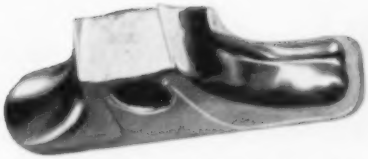
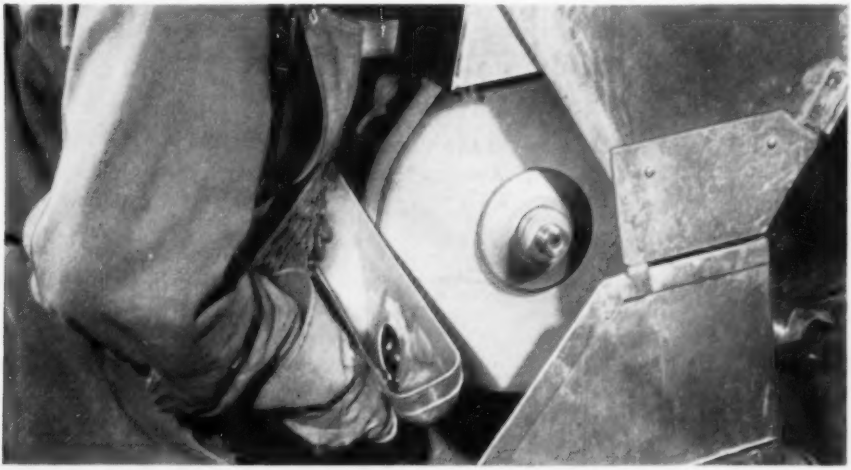
HOW WOULD YOU
SOLVE IT?



PRODUCTION PROBLEM: To cut unit costs and increase production of grinding off parting lines and other imperfections, and polishing die-cast aluminum vacuum cleaner nozzles prior to plating. Scott and Fetzer Co., makers of famous Kirby vacuum cleaners, were using set-up wheels in a three-grit sequence – #60, #120, #220 – to do this operation. Production was 6 finished units per hour.



SOLUTION: A 3M Representative suggested that this Cleveland, Ohio manufacturer switch to the 3M Method using Three-M-ite Cloth Belts, Grits #120 and #220. This method increased production 116% – from 6 to 13 finished nozzles per hour – *and* eliminated one grinding operation! Too, the finer polished surface obtained with 3M Belts made for far superior final plating.

A 3M Representative can help solve *your* grinding and finishing problems, too. His services are available without cost or obligation. Call him today!

Write Minnesota Mining and Mfg. Co., Dept. FH-66, St. Paul 6, Minn., for FREE copy of booklet *"Case History Reports on 3M Abrasive Belts."*

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3M COMPANY

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Plastisol Coating of Wire Products

Sixteen years ago, Industrial Electroplating Co., Inc., was established as a job plating shop. Since then the company has diversified into three fields that are allied with electroplating and finishing.

By GERARD H. POLL, JR.
Associate Editor

LIKE MOST PLATERS, Industrial Electroplating Co., Inc., Indianapolis, Indiana, finds it essential to insulate plating racks. Plastisols, tough organic coatings that are applied as a liquid and baked to a hard, chemical-resistant film, make excellent plating rack coatings. Special facilities for dipping the racks in the liquid plastisol and for heat curing the resultant coatings are necessary for effective application and satisfactory coating life.

Recently, Industrial Electroplating installed the necessary equipment and began plastisol coating its own plating racks. Soon other platers were sending their racks to be coated with the same material. The company thus expanded into the rack coating business.

The development and adoption of plastisol coatings as final finishes on many industrial and consumer products came to the attention of Carl and William Niehaus, owners of Industrial Electroplating Co., Inc. This type of coating is now specified on many industrial and consumer products that have to withstand corrosive chemicals and rough treatment. Already familiar with plating rack coating techniques, the company became aware of the possibility of plastisol coating products other than plating racks on a job basis. Equipment and methods, similar to those employed in coating plating racks, could be used in applying plastisol coatings to other parts.

All of the parts currently being

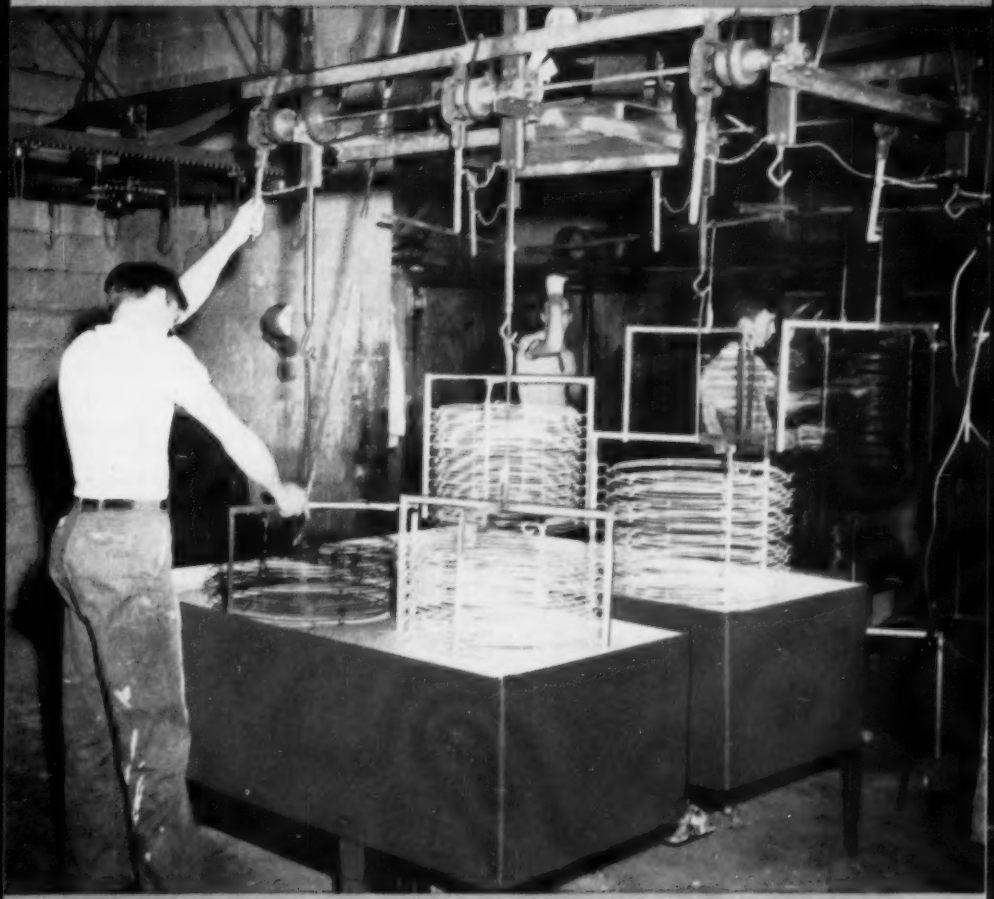

Fig. 1—In this double tank set-up, wire elements for clothes washers are dipped in a white plastisol formulation. The operator is shown lowering a rack of primed and baked elements into the plastisol. The other racks are being withdrawn mechanically at 4 inches per minute. The wire products are coated with primer first and baked in a convection oven.

"Lowering must be gradual to minimize the possibility of bubble formation . . ."

plastisol coated by Industrial Electroplating are wire products. One typical product consists of three concentric circular steel wires welded to short cross wires. This wire rack or assembly fits on the top of the spinning tub used in an automatic washer, and is designed to keep socks and other small articles in the washer from being forced over the top of the tub during the spinning cycle.

The wire assemblies are formed in a series of completely mechanized operations, including cutting, coiling, and assembly-welding on a specially-designed welding jig. The first step in the coating process is metal preparation, consisting of cleaning and phosphatizing to give the metal under-film corrosion resistance and ensure proper adherence of the plastisol coating. Steps in the process are as follows:

1. Electroclean in Wyandotte FS cleaner.
2. Spray water rinse.
3. Immerse in 30 per cent hydrochloric acid solution.
4. Spray water rinse.
5. Phosphatize (Granodine 500 solution).
6. Spray water rinse.
7. Chromate dip.
8. Spray water rinse.

The phosphatized wire rings are then dipped in Miccrosol primer, formulated for use under plastisols by Michigan Chrome and Chemical Company. The coating is first air dried and then cured in a convection type oven at a temperature of 385 deg. F. for six minutes. Air drying prior to baking prevents bubbles and blisters during baking.

After cooling, the wire assemblies are racked on specially-designed racks, and slowly lowered (Fig. 1) into a viscous white vinyl plastisol, Miccrosol No. 1259. Lowering must be gradual to minimize the possibility of bubble formation in the plastisol. These bubbles are very slow to leave such a heavy solution, and can cause uncoated areas and defects on the wire products. The racks are lowered into the tank on a cable which is attached to a variable-speed motor-driven overhead pulley. This device automatically pulls the racks from the liquid at a slow, controlled rate (4 inches per minute).

Rate of withdrawal is important in producing specified coating thickness and good quality. If the racks are withdrawn too rapidly, the coating produced is heavier than necessary and is likely to have "runs" and "tears." Withdrawing too slowly allows too much plastisol to drain from the parts and produces a coating thickness below that specified (0.015 inch in this case). Nine minutes are required for withdrawal.

Viscosity control is also important in producing specified coating thickness—too viscous a solution results in a too-heavy coating; viscosity lower than it should be produces a coating thickness below standard. Two plastisol solutions, each having a different consistency, are stocked and blended before using to produce

a coating solution of the desired viscosity. The tank is operated at room temperature (Fig. 1).

A pump on the plastisol tank recirculates the solution over a weir and through a screen at night and while the tank isn't in use. This step removes dirt from the solution and allows bubbles to escape. The pump is not operated while the tank is in use because this would make the top layer of the solution move while the parts are being withdrawn; this in effect would introduce another variable in controlling coating thickness.

The racks of coated wire parts, after they are withdrawn from the plastisol coating tank, are upended

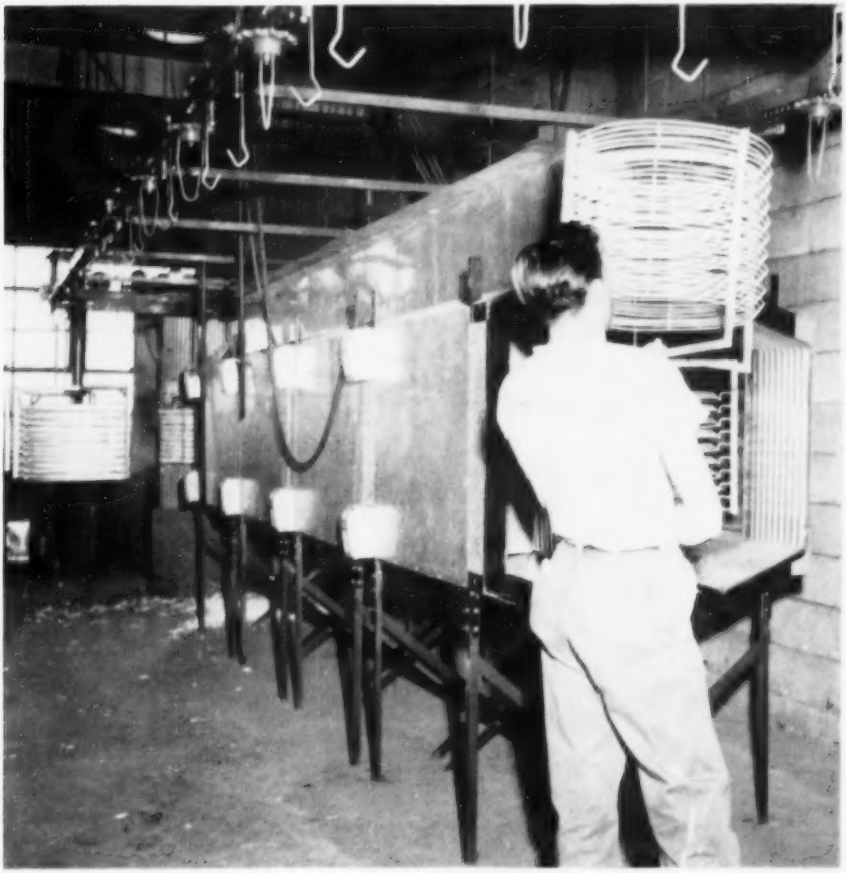

Fig. 2—After the wire products have been dipped and removed from the finish coat plastisol, each rack is inverted momentarily to eliminate bead formation. The rack is then rotated to normal position and hung on the conveyor so that the white plastisol may be baked in the infra-red oven. Conveyor travels through the oven at two feet per minute.

momentarily to help spread the coating more evenly (Fig. 2). The racks are then hung on the baking oven conveyor. An overhead chain conveyor carries the racks, suspended on three-foot centers, through the Cleveland Process Company quartz infra-red oven. Parts enter the oven through an opening 31 by 31 inches.

The conveyor travels through the oven at the rate of two feet per minute. A sprocket on each fixture engages a geared rack, causing each fixture to rotate constantly while being carried through the oven, thus giving all sides of the ware equal exposure to rays from the infra-red elements, which are on both sides of the oven.

The oven is heated by eight Clepco infra-red oven panels, each four feet long. Four of these sections are located on each side of the oven. The sections are individually controlled, and any number from one to eight can be turned on, thus varying the heat applied to any one job. Sixteen 575-watt elements are used on each panel. Air is exhausted from the top of the oven at 1200 c.f.m.

Three factors are used to control the amount of heat applied: conveyor speed, rate of exhaust, and the

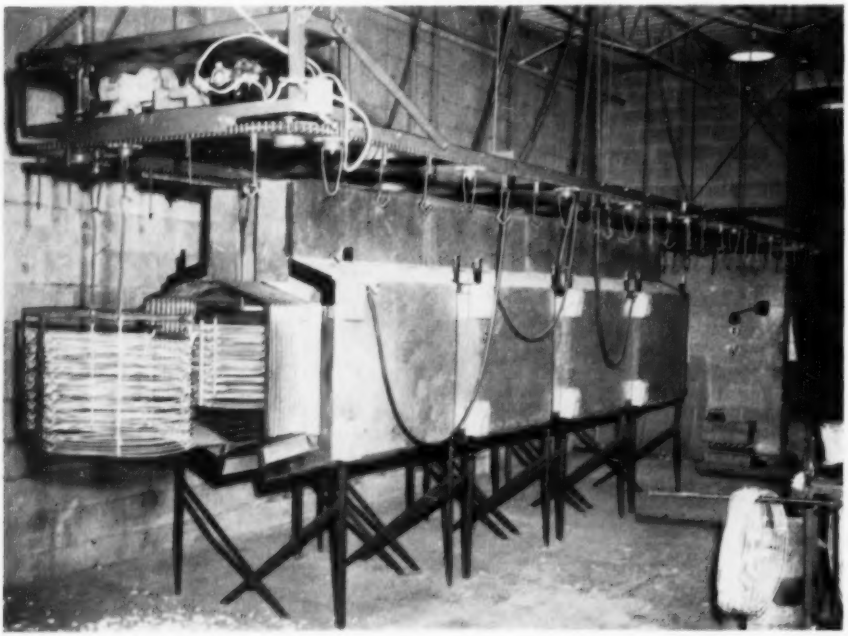

Fig. 3—Following a 9-minute baking cycle in the infra-red oven the baked plastisol coated wire assemblies cool for a few minutes and are then removed from the oven conveyor and unracked. Located above the discharge end of the oven is the conveyor drive mechanism. Conveyor speed is variable to provide flexibility. (Photos by PRODUCTS FINISHING.)

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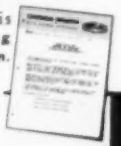
Improved penetrating, wetting, and emulsifying action in your washer without objectionable foaming.

GET THE COMPLETE STORY on this *brand NEW* Cowles QC Washing Machine Cleaner. **Send This Coupon.**



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number of elements being used at one time.

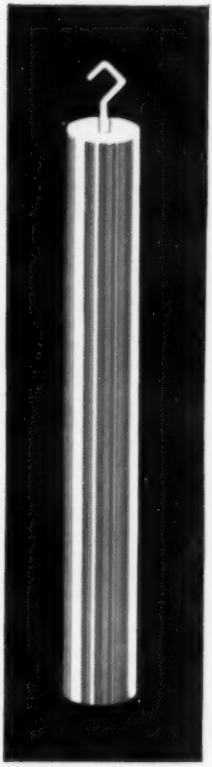
Following the 9-minute baking cycle (at 385 deg. F.), which can be varied as conditions require, the plastisol coated clothes washer parts cool during two to three minutes free air conveyor travel (Fig. 3). The racks are then unloaded from the conveyor hangers, and the clothes washer parts are unracked, inspected, and packed for shipment.

Industrial Electroplating, like many plating shops, encountered a fume removal or exhaust problem in the early years of its existence. By reason of the plant location, the company was forced to devise a method of disposing of fumes other than by exhausting them outdoors. A machine that literally washes the fumes from air, developed by the company, proved to be the answer.

Called the Niehaus Fume Separator, the patented device consists of a self-contained blower which draws air off contaminated tanks through regular duct systems and cleans the air before discharging it. In operation the machine draws contaminated air through a duct into which sprays of water are introduced. These sprays are reduced to fog by the blower wheel used to draw in the fumes, and in this state the water spray or fog intimately mixes with the entrained contaminants, dissolving them in so doing. The clean air is then exhausted.

These fume separators are now manufactured by the company and distributed nationally.

your plating problems *dissolve* with *top dissolution*



OFHC® ANODES

OFHC Anodes eliminate the need for bagging . . . minimize anode particles in plating solutions . . . cut metal losses in scrap by as much as 30 percent. **The reason:** OFHC Anodes are *totally free* of oxygen and deoxidants, have high density and low porosity. These characteristics mean *fewer insolubles, uniform dissolution, top anode efficiency.*

As proved in pilot-plant tests and commercial use, OFHC Anodes yield smoother plating than anodes of any other type . . . and *with less scrap and less sludge!* **The result:** More and more plating men are turning to OFHC Anodes to end plating roughness, and to reduce losses of metal in solution build-up and scrap. . . . Three shapes available in all lengths from 17 inches to 93 inches.

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Oval 2" x 3"

Round 3" dia.

FREE LITERATURE

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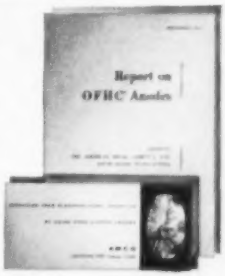

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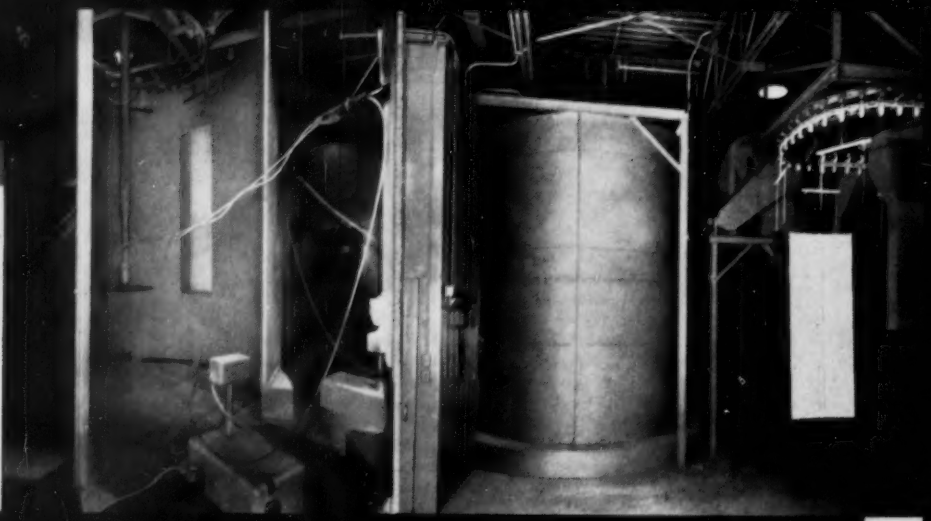
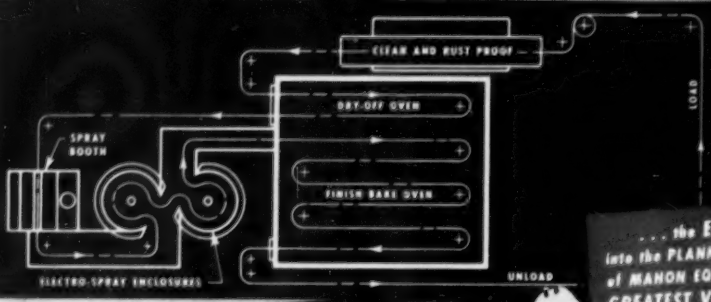
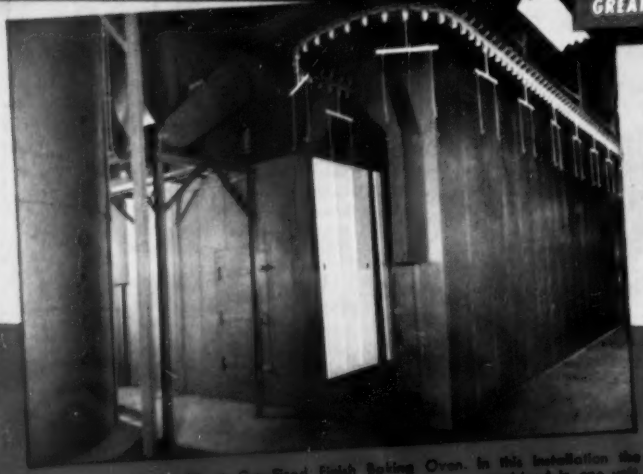
COMPLET





. . . the **EXPERIENCE** that goes into the **PLANNING** and **ENGINEERING** of **MAHON EQUIPMENT** is the item of **GREATEST VALUE to YOU!**



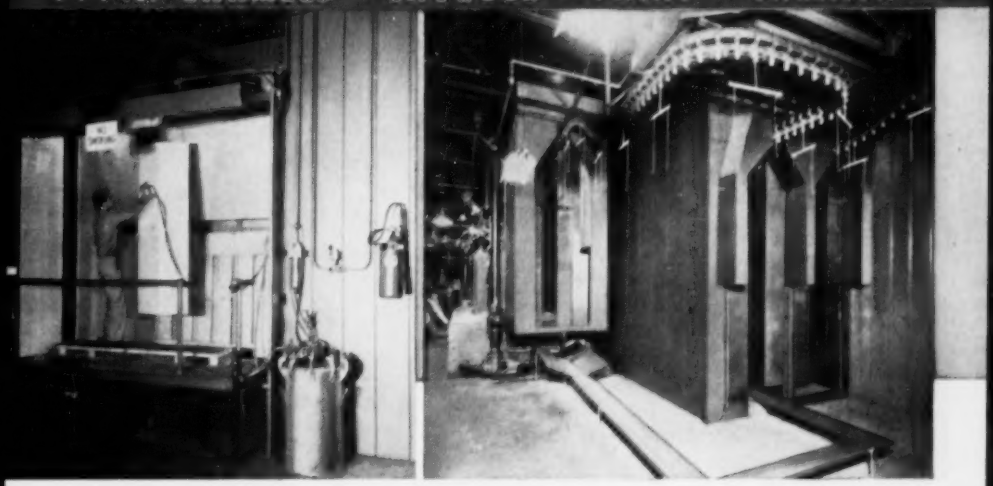
Mahon Direct Gas-Fired Finish Baking Oven. In this installation the Bake-Off Oven and the Finish Baking Oven are combined in one unit.

At the extreme right is a view showing the exit end of the Cleaning and Rust Proofing Machine, and entrance and exit openings of Dry-Off Oven; next is the Hydro-Filter Touch-Up Spray Booth. Directly above are interior and exterior views of one of the two Ventilated, circular Electrostatic Spray Enclosures. The Disc Applicator travels up and down. Air is exhausted through adjustable openings into a duct around the bottom of the enclosure.

M

Finishing SYSTEMS

. . . for ENAMELS • LACQUER • PAINT • VARNISH



Efficient, Compact MAHON SYSTEM Finishes 2000 "SLIMFOLD" Metal Closet Doors Per Day!

The Finishing equipment shown here is a Complete Mahon Finishing System designed especially to do a particular job for Ternes Steel Company, Detroit. It includes facilities for cleaning, rust proofing, drying, spray painting, electrostatic coating and finish baking on both sliding and folding metal closet doors. This is a typical example of Mahon's service to industry. No matter what your finishing requirement may be, it will pay you to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you will find them better qualified to advise you, and better qualified to do the all-important planning, engineering and coordinating of equipment, which is the key to fine finishes at minimum cost. And, if you care to investigate, you will find that Mahon equipment will serve you better . . . because, Mahon equipment is engineered better and built better for more economical operation over a longer period of time. Mahon will do the whole job on one contract . . . undivided responsibility for the entire system gets the job done faster—and can save you a lot of trouble that could upset your production plans. See Mahon's Insert in Sweet's Plant Engineering File, for further information, or write for Catalog A-656.

THE R. C. MAHON COMPANY, Detroit 34, Michigan • Branch Offices in New York and Chicago

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning, Pickling and Rust Proofing Equipment, Dry-Off Ovens, Cooling Tunnels, Hydro-Filter Spray Booths, Dip and Flow Coaters, Filtered Air Supply Systems, and Finish Baking Ovens, and many other Units of Special Processing and Production Equipment.

MAHON

BARREL FINISHING Principles

By H. LEROY BEAVER
Beaver Barrel Finishing Research
Lansdale, Pa.

Historical Outline

THE PRACTICE OF BARREL FINISHING of metal products in the United States is now more than 100 years old. Records of the Baird Machine Company disclose that Mr. Baird, the founder, while associated with Scovill Mfg. Co. in 1837, experimented to develop a process for the mass finishing of small metal parts. Early experiments centered around the use of wine casks and various other types of barrels and kegs. At that time, the idea of adding metallic burnishing materials had not been developed, and only the parts themselves were rotated in the barrels. The forerunner of the present day Baird burnishing machine was developed about 1907. The barrel of this machine is of the long and narrow type and will be referred to in this and future discussions as the Type "B" machine.

George B. Hogaboom provided the writer with a translation of an account of an attempt made in France to mass finish small metal articles by revolving them in a metal drum turned by a hand crank. The account further states that even before this time, articles were tumbled back and forth in a goatskin bag with small pebbles and wood chips. This French reference bears the date of 1850.

Edmunds in England, about the year 1885, produced an oscillating type of burnishing barrel, and it is from the experimental work of Edmunds that our present day barrel burnishing practice has evolved.

There is some question as to the exact date of the first commercial application of barrel finishing in the United States. In 1901 Edward L. Ashley operated an Edmunds-type machine in the plant of Scovill Mfg. Co. Following this, he developed various types of barrels used in the manufacturing process of that company. In 1903, the Imperial Seamless Wire Company of Providence, Rhode Island, purchased 8 of the Edmunds burnishing machines in

Birmingham, England. The first two of these machines were received in Providence in September, 1903. The Edmunds machine was of small diameter, long type with trunnions mounted off center to produce the oscillating motion. The Edmunds barrel will be designated Type "E."

Early in 1904, Henry and Everett Barton devised a twin-cylinder burnishing machine constructed with two small hexagonal barrels which were carried in a rack that revolved in a wood trough filled about half full of soapy water. Their first compartments were fitted with transverse ribs on the inner barrel surfaces designed to "stir up the balls and jewelry" as Everett Barton described this action to the writer. This barrel with few changes later became very popular in the jewelry manufacturing field. It has been designated as a "tubbing machine." The same design was later incorporated into the Smith-Richardson tubbing machine. This type of burnishing barrel will be referred to as Type "T."

In 1910, George E. Abbott developed the first large diameter and narrow type of burnishing barrel and was granted a United States patent on his invention. Future references to barrels of this type will classify this barrel as Type "A."

In June 1913, a United States patent was issued to Jean Ubersax of Delemont, Switzerland, for a process for burnishing silver utensils. The machine which he designed for carrying out the process—known as the Tahara automatic silver burnishing machine—is an excellent example of barrel finishing equipment. It is ideally suited to the process for which it was designed. For the purpose of future reference, it will be classified as Type "U."

Editor's Note:
H. LeRoy Beaver, during his long association with PRODUCTS FINISHING as a consulting and contributing editor, has prepared more than 100 articles on the subject of "Barrel Finishing of Metal Products." Since basic principles of barrel finishing, like other basic principles, do not change, we will present again a number of Mr. Beaver's articles so that present day finishers may benefit from his years of experience and personal knowledge of this important metal finishing process.

"The finish on my flying saucer isn't smooth enough—what can you guys do about it?"

Later, the Henderson brothers of Waterbury, Conn., introduced various types of barrels for burnishing work. The Henderson Bros. Company not only produces several types of burnishing barrels, but will also design and build barrels to customer specifications.

Many American manufacturers of barrel finishing equipment produce burnishing barrels of one or more of the types mentioned above (namely, Type A, Type B, Type T, Type U, and Type E).

Most of the present day burnishing barrels are composed of cast iron shells lined, preferably, with hard maple. It is impossible to form a water-tight joint with these sectional liners and so water seepage between the wood liners and the barrel shell sets up a continuous flow of iron oxide or rust which seeps into the barrel itself. One of the greatest single improvements we could suggest to barrel manufacturers is to have their cast iron barrel shells galvanized before final assembly. After the wood lining is set in place, this type of barrel is practically rustproof. We have one 8 by 12 inch barrel treated in this way that, after six years of almost continuous use, shows no disintegration of the galvanized surface. This barrel has already had at least fifteen sets of 3/8-inch new maple liners, and we have never noted even a trace of iron oxide stains on any work.

One of the major difficulties in barrel burnishing practice until recent years was the reloading of the steel burnishing material after completion of a run. This is a prodigious waste of production, time, and manpower. Power loaders and separators now do these tasks.

We believe we have worked with every type of burnishing barrel. There is still plenty of opportunity for the display of originality in devices for the carrying out of the barrel finishing process. Even though we have discussed the importance of other sizes and types of barrels with present day manufacturers, the tendency is still "follow the leader."

For cleaning metal, wood and plastic surfaces before painting. Order today through your supplier.

DETRO SALES CO., INC., *Culver City, California*
Standard of the Finishing Industry Since 1934
For more data circle **184** on Reader Service Card

"IMMENSE VALUE"

"It is obvious from your first lesson that your course will be of immense value," writes plating foreman John Armitage of the Automatic Electric Co. And it will be just as obvious to you when you enroll in this unique, easy-to-take, home study course in modern electroplating. Why not investigate? You can't lose! Write Joseph B. Kushner, Electroplating School, 115 Broad St., Stroudsburg 4F, Pa., Today!

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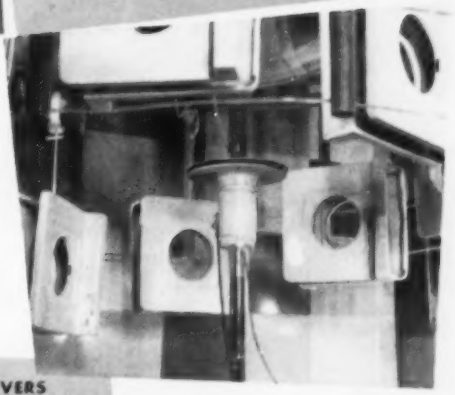
NOW *for the first time...*

PORCELAIN ENAMEL

is being applied successfully—
Yes, even spectacularly—
with RANSBURG NO. 2 ELECTROSTATIC SPRAY PROCESS



General Electric—an extensive user of Ransburg Electro-Spray for painting with synthetic enamels—is the first to use Ransburg No. 2 Process in the application of porcelain enamel.

GE—less than a year in electrostatic production—now is processing almost a million square feet of cover coat each month in the General Electric Home Laundry finishing department at Appliance Park.

DRYER TOPS AND WASHER COVERS ARE BEING COATED ELECTROSTATICALLY WITH THESE SPECTACULAR RESULTS

Quality of appearance and chip resistance are greatly improved with all colors: white, yellow, pink, turquoise, blue and brown.

About 97% of the atomized enamel is deposited on the washer and dryer parts.

Because of improved uniformity in coating thickness, weight of applied enamel was substantially reduced.

Because of lower application weight, the few rejected parts can be re-processed more times before being scrapped. This reduces the ultimate scrap rate by at least 95% of that previously expected.

Efficiency, measured by the amount of good ware, averages above 90%.

Want your products tested?

Ransburg has fully equipped laboratory facilities including reciprocating disks, helical conveyors, stationary disks, and the latest advancements in equipment for applying porcelain enamel with the No. 2 Electrostatic Spray Process. Manufacturers are invited to send sample products to our Indianapolis laboratories for tests and demonstrations to prove for you the advantages and benefits of electrostatic spray application of porcelain enamels.

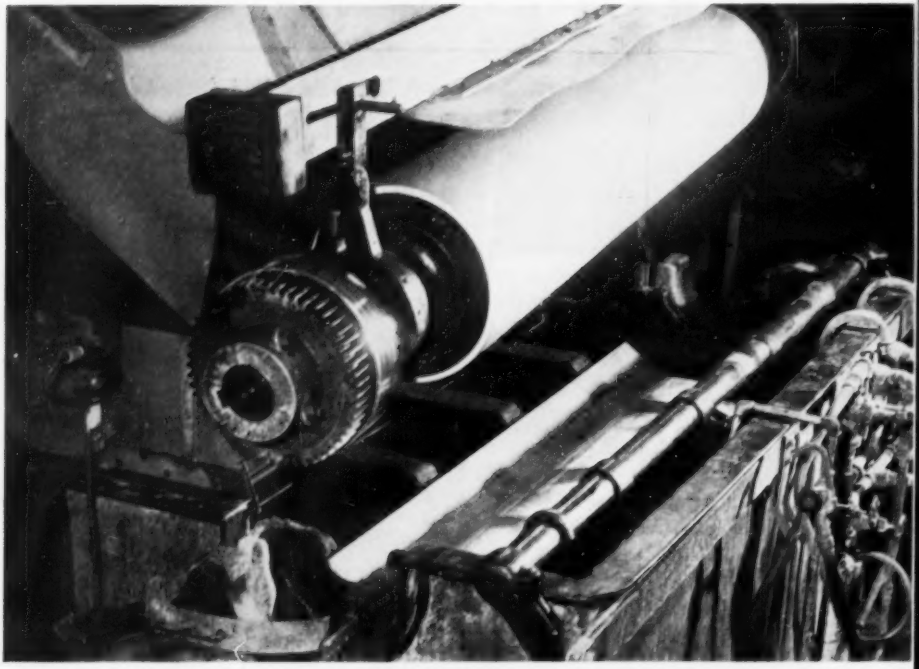
Ransburg ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

For more data circle 186 on Reader Service Card

Electroplating copper shells on rotogravure cylinders



View of plating tank, drained to show location of the 67″ x 3″ x 1″ "Plus-4" Anodes.

Triangle Publications, Inc., has an enviable reputation for high-quality 4-color gravure reproduction at high speed. Here are three of its leading magazines.

TRIANGLE PUBLICATIONS, INC., Philadelphia, made comparative tests, for a 22-month period, of "Plus-4" (Phosphorized Copper) Anodes in the electroplating of rotogravure cylinders.

The results were summarized by the Director of Triangle Publications' Research and Development Laboratories:

" 'Plus-4' Anodes give an improved copper printing surface with substantial

is simpler and faster with "Plus-4" Anodes

savings in time, labor, and material—and our men like to use them."

Plating procedure: 1500-lb. steel rotogravure cylinders, 67" long and 43" in circumference, are cyanide-copperplated .0005"—then acid-copperplated .040" to .080". This surface is ground and polished and coated with immersion nickel. A .005" copper Ballard shell is acid-plated over the nickel—the shell which is engraved and forms the printing surface. The nickel layer makes it possible to strip the outer shell off after printing. Another shell is then plated on the cylinder for the next job. The dense physical quality of the unchromed copper Ballard shell makes it possible to print 1,250,000 impressions from a single set of design cylinders.

For electroplating, the cylinders are placed horizontally in the acid-copperplating solution ⅓ submerged, and rotated. The anodes lie parallel to the cylinder, 1½" to 2" away. Current density is 280 to 300 amps per sq. ft.

Solution balance: With other anodes, solution balancing to remove copper sulfate and add acid is necessary 20 to 22 times a year. With "Plus-4" Anodes, the solution has been balanced only 4 to 6 times a year. This not only made substantial savings in copper sulfate and acid, time, and labor—but also gave improved control of the plating process by minimizing cyclic changes in the solution.

Anode corrosion: When anodes corrode faster in length than width, low areas develop at the ends of the roll—and anodes must be scrapped. Scrap loss with other anodes has run 8 to 10%. "Plus-4" Anodes corrode so uniformly, however, that scrap was only 1 to 2%. They produce uniform deposits with less attention and checking.

Cathode deposit: With "Plus-4" Anodes the sharp reduction of copper lost as sludge and in copper sulfate dumped accounted for a 12 to 14% increase in cathode deposit.

See for yourself: Across the entire field of acid-copper electroplating—"Plus-4" Anodes are saving money, making work easier. Write today for details of how you can get a test supply of "Plus-4" Anodes sufficient to fill one tank. Address: The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ont. 56140A

"PLUS-4" ANODES
(Phosphorized Copper)
an
ANACONDA®
product
made by
THE AMERICAN BRASS COMPANY
For use in Patent No. 2,689,216

For more data circle **187** on Reader Service Card

finishing clinic

Suggested solutions to problems submitted by readers. Send your problem to our Editorial Staff. There is no charge.

Gold Lacquer

Question: *We are sending you under separate cover a sample fishing rod handle with a gold-colored finish. We think that there was a 1-dip process used in applying this finish; however, that is about the extent of our knowledge concerning it.*

We would appreciate it very much if you could tell us the kind of material used in this finish, how it was applied, how it was baked on, and any other useful suggestions which might help us.

R. S. H.

Answer: The general appearance of this finish indicated that it was either a gold lacquer or a clear lacquer over a chromate dip. Application of a drop of lacquer thinner removed the gold film. Therefore, it would appear that this finish is secured by dipping the fishing rod handles into gold lacquer which dries in air without the application of heat. However, since it was almost impossible to find any evidence of beads on projecting edges, it is possible that this lacquer film was sprayed on rather than dipped. Again, however, the finish would dry in air without the application of heat.

We are forwarding the names of several lacquer manufacturers for you to contact if you wish information on a material of this type.

You might find it advantageous to use a chromate dip (which produces a corrosion-resistant film as well as an orange-gold color on the die casting). This dip would have to be followed by the application of a clear lacquer or a gold lacquer. Whether or not you use the dip will be determined by the quality of the final product. If you desire a very high quality product, the dip is recommended. If you are producing a part which does not need to be of particularly high quality, then the gold lacquer over the buffed or barrel tumbled die casting will be adequate.

For information regarding chromate dip, we are referring you to several formulators and suppliers.

★ ★ ★

Plating Stainless Steel

Question: *I have some stainless steel to copper plate, and would appreciate your sending information as to how it is done.*

J. J. B.

Answer: The American Society for Testing Materials, in its Specification B254-53, recommends that stainless steel be cleaned by anodic electro-cleaning—in other words, the article should be cleaned by reverse current rather than by the use of direct current.

After the cleaning operation and prior to the plating operation, the

stainless steel must be activated by one of the following processes:

1. Treat cathodically (direct current) for 1 to 5 minutes in 5 to 50 per cent sulfuric acid at 5 a.s.f.

2. Cathodic treatment in 5 to 50 per cent muriatic acid for 1 to 5 minutes at 20 amperes per square foot.

3. Dip in 10 to 30 per cent muriatic acid at room temperature followed by cathodic treatment in 5 to 50 per cent sulfuric acid at a current density of 5 to 25 amperes per square foot.

4. Dip in a 20 to 50 per cent solution of sulfuric acid operated at 150 to 180 deg. F. for at least 1 minute after gassing starts.

5. Dip in a solution of 1/10 per cent hydrochloric acid and 1 per cent sulfuric acid for 26 seconds.

There are other activation treatments, but they are somewhat more complicated. After activation, parts must be thoroughly rinsed in water which is slightly acid.

In copper plating over the active stainless steel surface, arrangements should be made to connect the parts to be plated to the electric circuit so that the current is on as the parts are being placed in the cyanide copper plating bath.

★ ★ ★

Roller Coat Painting

Question: *I am wondering if you could possibly give me any information on roller coating glue and paint on aluminum sheets.*

W. L. S.

Answer: The process of paint roller coating has been described in several articles in PRODUCTS FINISHING, for example, "Chemical Surface Treatment Extends the Durability of Kool Vent All-Weather Aluminum Awnings;" "Coating and Forming Aluminum Awning Panels;" and, "A Strip Coating Line For High Production Painting of Coil Stock," copies of which we are enclosing with this letter.

An installation for applying drawing compounds by roller coating was described in the article, "Automatic Application of Drawing Compound Improves Forming and Processing." We are enclosing tear sheets.

We are referring you to manufacturers of roller coating equipment for further information.

★ ★ ★

Exhaust Hoods

Question: *Perhaps you know where we can obtain hoods to partly enclose rag buffs for dust removal. We have 8-inch diameter rag buffs. It is rather awkward to make them ourselves, or have them made by a local sheet metal worker.*

R. B.

Answer: In answer to your letter regarding hoods to enclose buffing wheels, we are forwarding the names of several manufacturers of these products.

★ ★ ★

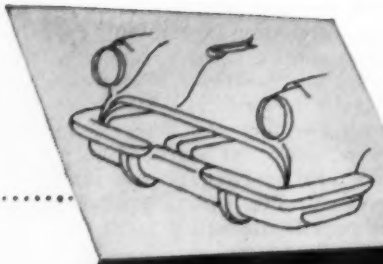
Metallic Enamel Finish

Question: *We are searching for a finish on metal that would be baked enamel but still have the appearance of a fairly good piece of brass plating. Do you know of anybody who manufactures anything like this? We would be pleased to hear from them.*

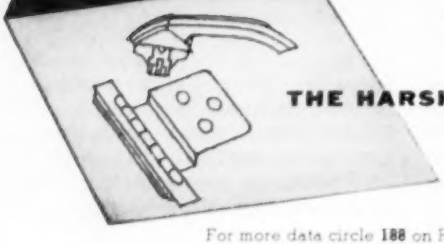
The finish must be bright, shiny, and not flaky like an ordinary gilt.

R. S.

Answer: There are a number of metallic lacquers or metallic baked finishes which would be satisfactory for this application. For specific recommendations, we are referring you to several manufacturers of paint.



HARSHAW
electroplating
CHEMICALS
and
ANODES



nickel plating

. . still and barrel . . nickel anodes—all commercial grades and sizes . . anode bags . . single nickel salts—nickel chloride . . nickel carbonate . . nickel fluoborate . . boric acid

chromium plating

. . pure "Krome Flake" 99.8% CrO_3 . . sulphates less than .10% . . lead, tin-lead and antimony-lead anodes.

copper plating

. . . copper ball anodes . . Rochelle Salts . . . sodium and copper cyanides . . copper sulfate . . copper fluoborate.

cadmium plating

. . . ball and cast cadmium anodes . . cadmium oxide . . . sodium cyanide . . . cadmium fluoborate.

tin plating

. . . cast tin anodes . . sodium stannate . . . stannous sulfate . . . tin fluoborate . . . acid tin addition agent.

zinc plating

. . . ball and cast zinc anodes . . . sodium and zinc cyanide . . . zinc sulfate . . zinc fluoborate.

lead plating

. . . cast lead anodes . . . lead fluoborate.

silver plating

. . . silver cyanide.

THE HARSHAW CHEMICAL COMPANY
Cleveland 6, Ohio

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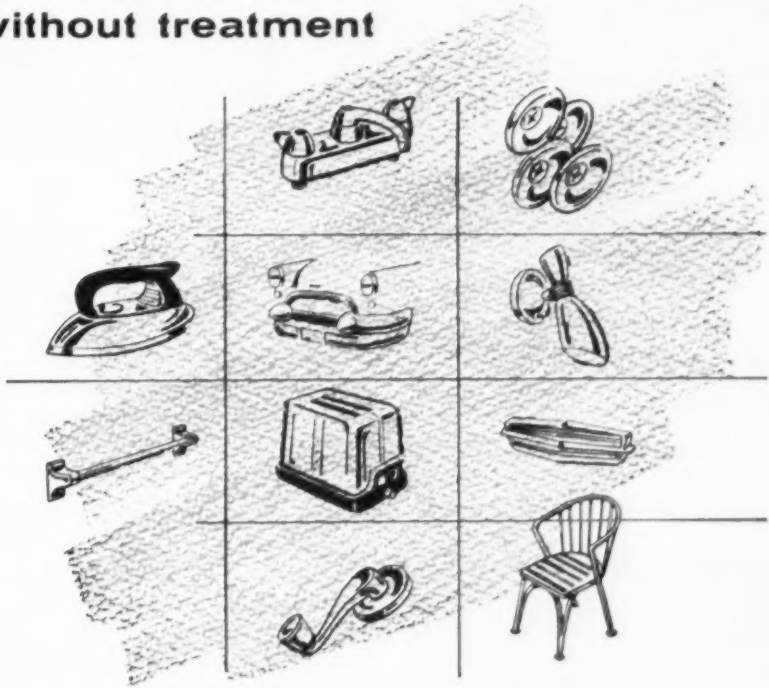
HARSHAW Nubrite

Long, bright nickel plating operation without treatment



Other outstanding advantages are:

BRIGHT OVER WIDE RANGE
from a few amperes/ft.^{2}
to well over 100 amperes/ft.^{2}

HIGH TOLERANCE to common impurities

HIGHLY RECEPTIVE to chrome

EXCELLENT LEVELING

BETTER BRIGHTNESS with thinner deposits.

SIMPLE OPERATION and CONTROL
Plates brightly from 120°F to 155°F.
pH can vary over a wide range.
Liquid addition agents.

REMAINS DUCTILE AFTER LONG OPERATION

For additional information contact the Harshaw office nearest you.

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For more data circle 189 on Reader Service Card

Dr. C. Fred Gurnham
Head, Dept. of Chemical Engineering
Michigan State Univ.

SPOTLIGHTING FINISHING PROGRESS

Sodium Hydride Descaling

All electroplaters recognize the importance of thorough cleaning of the base metal prior to actual electrodeposition. Rust, scale, oil, cleaning compounds, and other surface contaminants must be removed completely from the metal if a firmly bonded and smooth, adherent plate is to be achieved.

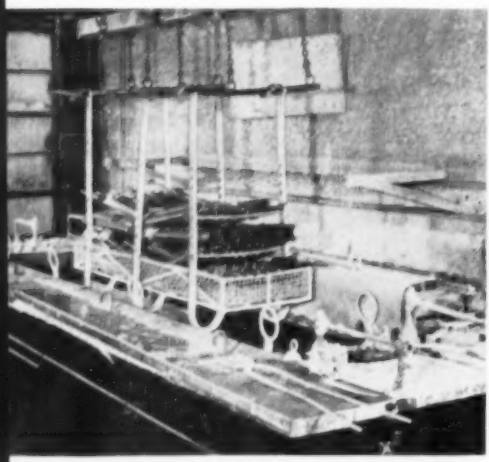
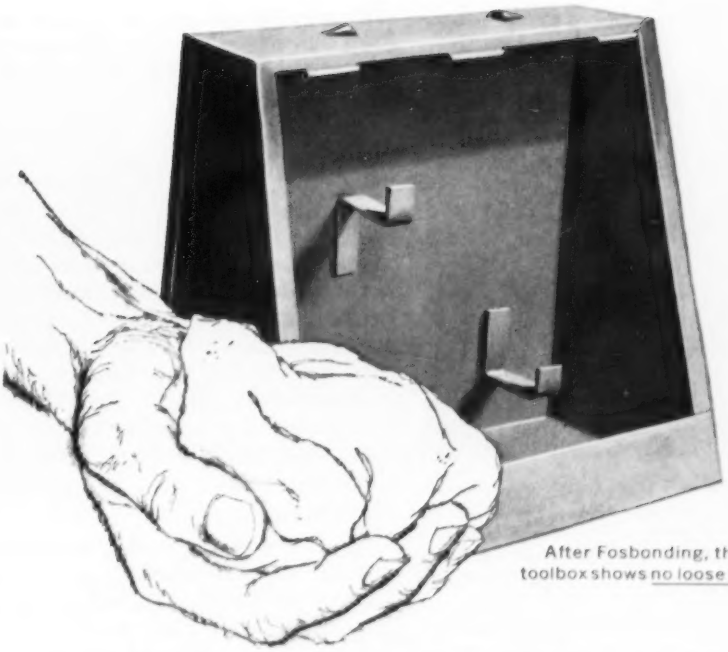


Fig. 1—Stainless steel steam turbine blades entering sodium hydride descaling bath.

Acid pickling is the most common technique for removing rust, scale, and other oxide or sulfide deposits. Treatment of an oxidized metal surface with sulfuric or other strong mineral acid results in solution of a portion of the coating as a metal salt, and loosening and dislodging of the remainder as sludge.

Acid pickling is a common operation in the iron and steel industry and in non-ferrous metal processing. It may be employed several times during the fabrication of metal sheet, rod, wire, or other shapes. Pickling is also utilized extensively in the electroplating industry as preliminary cleaning for metal shapes that carry coatings of rust or scale.

In spite of the general use of acid pickling techniques in the steel and



After Fosbonding, this steel toolbox shows no loose powder

Get powder-free iron phosphate coatings under organic finishes with FOSBOND 22

Here's a truly dependable iron phosphate coating! Fosbond® 22 assures uniform phosphate protection of metal parts, cuts finishing rejects to the bone. The balanced composition of Fosbond 22 prevents the highs and lows of ordinary phosphate films, and its superior cleaning power lets you clean and coat in one spray bath.

A dry powder in a non-returnable drum, Fosbond 22 simplifies storage and processing. In addition, long, economical bath life and improved corrosion-resistance under organic finishes help Fosbond 22 pay for itself.

TRY IT IN YOUR CYCLE. See how this inexpensive, easily-controlled phosphate system cuts cleaning and coating costs. Ask your Pennsalt representative for a demonstration in your equipment, or write Metal Processing Dept. 245, Pennsylvania Salt Manufacturing Company, Three Penn Center Plaza, Philadelphia 2, Pa. In Canada: Pennsalt Chemicals of Canada, Hamilton, Ontario.

Pennsalt Chemicals

Metal Cleaners • Phosphate Coatings • Cold-Working Lubricants

A BETTER START FOR YOUR FINISH

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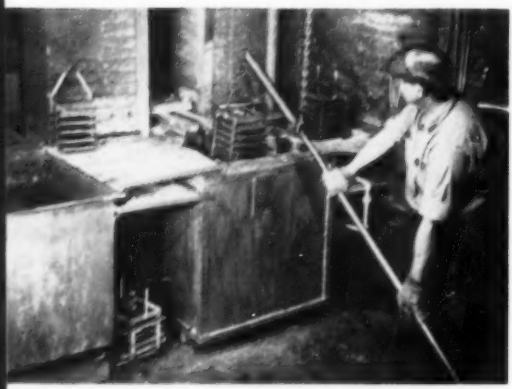


Fig. 2—Intricate, high speed steel thread chasers being lowered into sodium hydride descaling bath. Hydride descaling is ideal for these parts, since it does not attack base metal, thus can maintain close tolerances.

other metal industries, the operation has a number of drawbacks. Acid solutions are, of course, highly corrosive, and it sometimes becomes a problem to achieve the necessary balance between complete removal of scale and rust without attack on the base metal itself. With too long an exposure period or too aggressive an acid, pitting or etching of the metal surface may occur, especially at the grain boundaries of stainless steel and other alloys. Corrosive attack obviously results in loss of base metal, and may prevent the maintenance of close dimensional tolerances.

The corrosive effect of acid pickle solutions requires special materials for tanks and other equipment, including storage and handling facilities, piping, drains, and sewers. Disposal of spent acid, sludges, and rinse waters in a manner that will not cause pollution of streams or undesirable effects in municipal sewerage systems is neither an easy nor an inexpensive task.

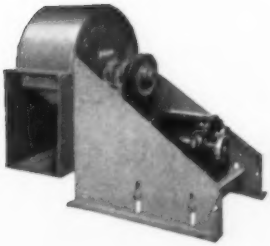
Another drawback of the acid pickling process, at least for certain metals, is the evolution of hydrogen gas formed by acid attack on the metal, and the resulting embrittlement of the final metal product. It is not intended to imply that these difficulties cannot be overcome; in fact, the widespread use of acid pickles demonstrates that successful counter measures are available. The difficulties nevertheless exist, and a substitute step for acid pickling often becomes desirable.

Sodium Hydride

The sodium hydride descaling process was developed by E. I. du Pont de Nemours and Company, and was introduced to the metal industries during 1941. World War II prevented its rapid adoption except for certain specialty or high-priority applications, because of chemical shortages and allocations, and a patent office secrecy order. With the lifting of these restrictions and the greater availability of chemicals after the war, the process gained rapidly in popularity, and today is widely accepted as a standard descaling method. It is particularly advantageous for metals or metal shapes that are difficult or impossible to clean by the older acid process.

Sodium hydride has the chemical formula NaH, which appears contrary to some of the older concepts of positive and negative valence, but may perhaps be considered as analogous to the H-H or H_2 molecule of hydrogen gas. At any rate, it is

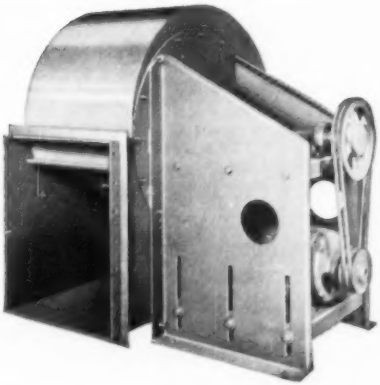
nyb



Nos. 76
and 91
Belted
Junior Fan

GENERAL PURPOSE FANS

Recommended for their ease of installation, low maintenance cost and space saving features



Portable, self-contained units of medium capacities for low pressure industrial and ventilating applications. Designed particularly for use with duct systems.

General Purpose Fans are made in three types and eight basic sizes with capacities from 1200 to 19,000 cfm. (Junior fans in five sizes from 160 to 4100 cfm). These include both direct connected and belt driven models.

nyb products have 65 years of manufacturing experience and engineering knowledge built into them. All ***nyb*** products are laboratory tested, accurately rated and fully guaranteed in strict accordance with standard test codes.

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a definite compound and can be formed by direct combination of sodium metal (Na) and hydrogen gas. In practice, a molten bath of caustic soda or sodium hydroxide (NaOH) is used as the carrier or solvent. Sodium and hydrogen are caused to react and to dissolve in the molten caustic in a combination of about ½ to 2 per cent NaH.

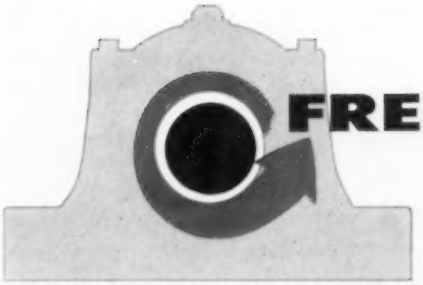
The molten solution of NaOH and NaH, at temperatures of the order of 700 deg. F., provides a strongly reducing treatment to metals immersed in the bath. Chemically, the NaH removes oxygen from the metal oxides, reducing them to the corresponding metal or to a "lower" oxide, and being itself oxidized to NaOH. Typical equations for such reactions are as follows:

$$4\,NaH + Fe_3O_4 \rightarrow 3\,Fe + 4\,NaOH$$
$$NaH + CuO \rightarrow Cu + NaOH$$
$$NaH + Cr_2O_3 \rightarrow 2\,CrO + NaOH$$

Other scale constituents, such as sulfides and carbonates, react in a similar manner. The reduced metal or other end product is generally in the form of powder or small flakes, some of which falls to the bottom of the bath, or can be washed from the work after its removal from the bath. Sodium hydroxide produced by the reaction at least partially compensates for dragout from the bath.

Hydride Descaling Applications

Sodium hydride descaling has been utilized on a full scale for the treatment of nearly all of the commercial metals and alloys. Only aluminum, magnesium, and low-melting ferrous alloys cannot be treated by



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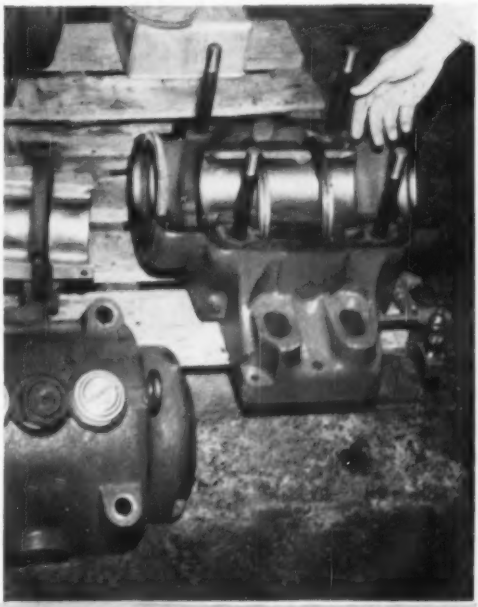

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the hydride process, because these are attacked by molten caustic. The ferrous metals that can be descaled by sodium hydride include cast iron, carbon steels, S.A.E. steels, chrome and chrome nickel stainless steels, high-speed steel, and silicon steel. Among the non-ferrous metals that are cleaned by hydride on a large scale are nickel and such nickel alloys as Monel and Inconel, copper, silver, cobalt and its alloys, titanium and titanium alloys, and Stellite.

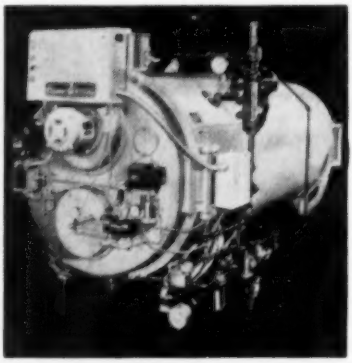
Metal parts and objects in practically any shape can be cleaned quickly by the sodium hydride process. Rod, wire, bar, strip, plate and sheet, castings, forgings, and stampings can be conveniently processed, as well as compound shapes formed by welding, brazing, or other assembly means. Size and shape of the article to be descaled are not limiting factors except as they determine tank size.

Equipment for sodium hydride descaling can be adapted to manual operation or to a conveyorized or continuous system. Work may be placed in baskets, or may be supported on suitable fixtures.

The Sodium Hydride Descaling Process

Treatment time in the hydride bath varies from 15 seconds

PROTECTS this BOILER better than any other finish!



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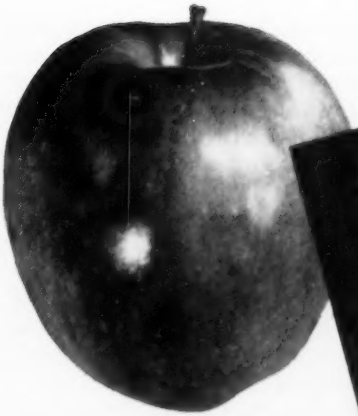

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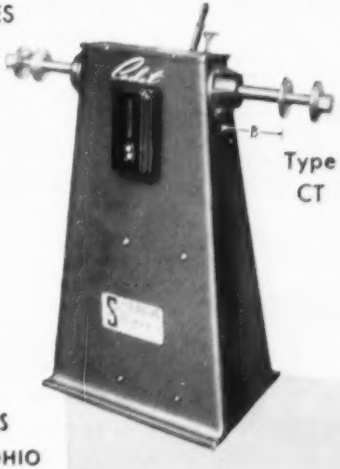

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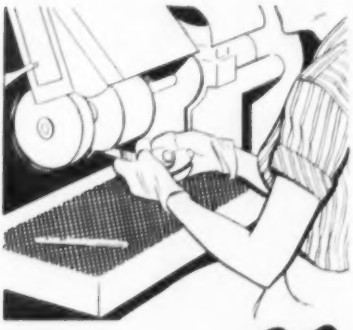
to 20 minutes, depending on size of the object, characteristics of the metal or alloy, and type and amount of scale to be removed. Preheating of the work before hydride treatment reduces the time required because it prevents chilling of the molten bath. Scale, after reduction to metal powder or to lower metal oxides, partially adheres to the work; some falls to the bottom of the tank as sludge.

After the sodium hydride reduction step, the metal work is removed from the bath, drained briefly, and quenched with water. Much of the reduced scale which still adheres to the metal is dislodged by the thermal shock and the evolution of steam during quenching. A high-pressure water jet can also be applied at this stage to aid in removing the scale and rinsing of the caustic soda. A brief dip in dilute acid provides complete removal of the caustic, and produces the bright surface desired for subsequent forming operations. A final water rinse is customary to remove acid and smut produced in the acid dipping step.

A typical cleaning cycle, as outlined in a Du Pont manual on sodium hydride descaling, includes the following steps:

1. Descale in sodium hydride (1.5 to 2 per cent) and caustic soda (98 + per cent) molten bath, usually 10 to 15 minutes.
2. Water quench and rinse.
3. Sulfuric acid (10 per cent) dip, 2 to 4 minutes.
4. Water rinse.

PROTECT FINE PLATED SURFACES



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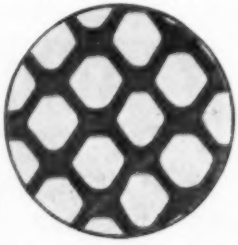

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5. Nitric acid (10 per cent) dip, 70 to 165 deg. F., 2 to 4 minutes. A "bleached" finish can be obtained on some steels by addition of 1 to 2 per cent hydrofluoric acid to the nitric acid.
6. High pressure water rinse.

Caustic soda, technical grade, is used for the initial bath makeup. The cheapest form is solid caustic, but flake or other anhydrous form can be used.

Sodium metal is obtainable commercially in bricks of several sizes. The most convenient size for descaling purposes weighs 5 pounds. These are available in steel drums containing 290 pounds net. Usually from 6 to 12 pounds is required per ton of metal descaled.

Hydrogen can be purchased as compressed gas in cylinders, or can be produced in the plant by dissociation of ammonia. The gas should be commercially pure, and free from oxygen, carbon monoxide, carbon dioxide, and water vapor, because these may react with the sodium or other bath ingredients.

Equipment

The tank containing the molten caustic and sodium hydride may be of any size and shape suitable for the work processed. Its capacity should be sufficient to provide a reservoir of heat

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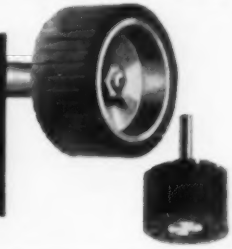

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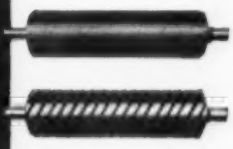

Chicago Rubber uses the most scientific equipment available to insure proper balance of its contact wheels and rolls. You are assured greater safety and efficiency on the job.

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which will prevent excessive cooling by the entering metal. Low-carbon steel is a suitable material of construction. Sludge can be collected and removed by means of a perforated sludge pan resting on the bottom of the tank, or by dredging.

Heating facilities should be large enough to maintain the desired bath temperature at the anticipated rate of work throughout. Preheating of the work relieves much of the heating load at the bath. Any standard type of salt-bath heater can be employed, including gas or oil burners, gas-fired immersion tubes, or submerged electrode electric heaters. Electrical resistance elements may be employed for heating small baths.

Sodium hydride generator boxes are mounted along the side of the caustic tank. These provide a port for addition of sodium metal bricks, and a holding reservoir for the sodium during and after melting. Molten sodium floats on the caustic soda in the generator box. Hydrogen is added at this point, and reacts with melted sodium metal to form the hydride.

Other processing tanks used in conjunction with hydride descaling include the water quench, acid dips, and water rinses. These should be

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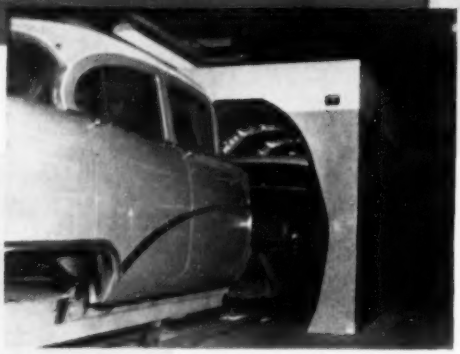
Find CLEPCO Quartz Paint Ovens require half the floor space and half the KW input of infra-red bulb ovens.



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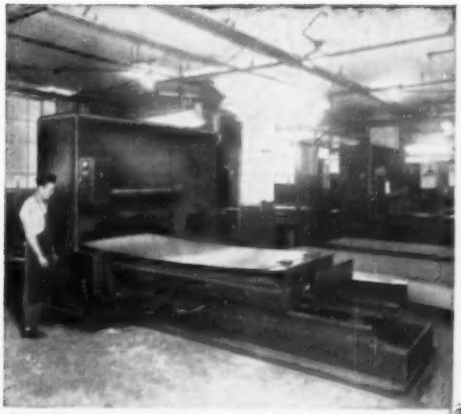

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HILL Pinch Roll Grinder and Polisher for "Wet" or "Dry" operations. (Shown in series for straight line production)

HILL 2-Roll Vertical Abrasive Belt Grinding and Polishing machines are the logical result of 25 years of research and experience in producing self contained units for successfully processing ferrous and non-ferrous sheets. We have consistently proven that wide abrasive belt grinding and polishing equipment must incorporate these fundamental features — rugged construction, simplicity of design, accessibility, versatility and centralized controls.

HILL abrasive belt polishing machines are recommended for continuous operation and insure lower production costs with superior finishes as required today by the manufacturers of decorative plastics, food processing equipment, automobile bumpers, lithographers and photo engravers plates, home appliances, etc., etc.

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COVERS COMPLETELY WITH ONLY 1 COAT!
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located far enough from the molten caustic and sodium tank to prevent hazards. Ventilation of the quench tank is desirable.

Conclusions

Sodium hydride descaling is not expected to replace acid pickling for the cleaning of all types of metal. It possesses numerous special advantages, and is widely used in particular applications.

Re: Bright Plating, May issue.

Dear Mr. Blount:

Your omission of the first paragraph of my article "Bright Plating: A Theory and Research Plan" makes it appear that I should receive personal credit for these ideas. That is not at all true since the entire paper was almost an exact copy of a statement by Professor C. C. DeWitt. Will you please print the following introductory paragraph in the next issue as an apology from us to Dr. DeWitt?

"The following discussion has been prepared by Dr. C. C. DeWitt, Research Professor of Chemical Engineering at Michigan State University. Professor DeWitt is a well-known authority on the nature and characteristics of surfaces. He has applied this fundamental knowledge of surfaces to some basic thinking on bright electrodeposits, with the results outlined in the following paragraphs. This statement was originally prepared to support a research proposal, but Dr. DeWitt is permitting its publication at this time in PRODUCTS FINISHING."

C. Fred Gurnham

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Parlon-Synthetic coatings are now available to meet all types of finishing requirements—no matter how specialized. For further technical information on a Parlon-Synthetic that is suited to your application, call or write your regular supplier of quality paint finishes or write directly to Hercules.

Cellulose Products Department
HERCULES POWDER COMPANY
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For more data circle 206 on Reader Service Card

Practical Applications of Modern Products

Silicone-Based Finish Withstands Weathering

Small as the average private airplane appears to be, it is still considerably larger than a car. A plain wash job, for instance, costs about $10; a wax-polish job as much as $120. And because of constant exposure to the elements, small planes need washing and polishing frequently.

A silicone-based finish developed by the Robeson-Preservo Co. of Port Huron, Michigan, however, holds promise of substantial reductions in maintenance costs.

Applied by spray, a single coating of the silicone-based paint air-drys in 8 hours to a hard, tough finish with a high gloss. The finish retains that gloss well after prolonged exposure.

A Cessna 140 owned by Via Air, Inc., of Port Huron, for example, was coated with the new finish in January, 1955. The ship has only been washed once since and has never been polished at all, yet its appearance is still good.

The finish is based on modified silicone resins manufactured by Dow Corning Corporation of Midland, Michigan. It is available in a wide range of colors as well as black or white.

For more data circle 1 on Reader Service Card

Applied in January, 1955, the silicone-based finish on this Cessna 140 still retains gloss. It has been washed only once, has never been polished, although constantly exposed.

Hotpoint Recirculates Ceramic Frit from Central Mixing Room

A circulating system for ceramic finishes has been operating successfully in the Hotpoint Company's Chicago plant since April, 1955.

A key component of this system is the Binks Model PM-120 Ceramic Regulator, which maintains the desired flow and fluid pressure at each spray station, regardless of position on the supply line.

The ceramic circulating system at Hotpoint supplies identical material to three spray stations, ensuring uniform finishes on all Hotpoint range components. It operates as follows:

After the frit has been milled, it is stored in large stainless steel tanks on a balcony above the mill. From there, it flows by gravity through magnetic separators to a pump which lifts it to two large Binks stainless steel mixing tanks on another part of the balcony. Specially-designed stainless steel air-driven agitators prevent the frit from settling-out in these tanks.

From these mixing tanks the frit is pumped past all spray stations through a closed system of stainless steel pipes. Frit which is not sprayed returns to the tanks in the mill room for recirculation. The two Binks diaphragm-type pumps that circulate the frit are specially designed to withstand abrasion.

With all frit being handled and mixed in a central location under laboratory conditions, efficiency of materials handling and quality control are im-

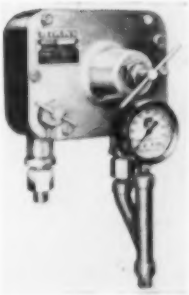
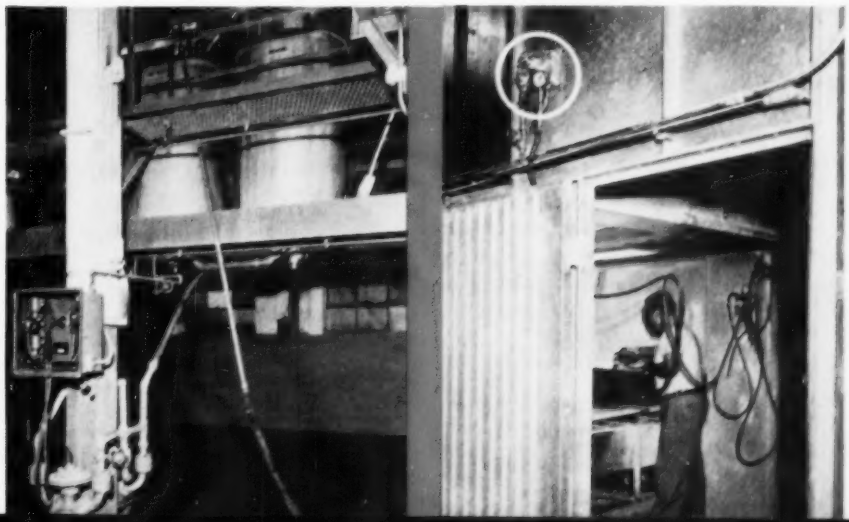


Fig. 2—Close-up of Binks Model PM-120 Ceramic Regulator, heart of automatic recirculating system for ceramic finishes.

Fig. 1—Central mixing room for ceramic frit at Hotpoint. Special pumps for circulating frit are in the lower left corner of the photo. Controls are directly above the pumps. Two Binks stainless steel mixing tanks, equipped with special agitators, are visible (balcony).

Fig. 3—Binks Model PM-120 regulator for ceramic materials is shown in the circle. It keeps the fluid pressure and flow rate uniform at each station, regardless of position in the system. (Photographs courtesy of Binks Manufacturing Company, Chicago, Ill.)



proved. The circulating system for porcelain enamels reduces the chance of contamination, and minimizes waste. Finishing departments are freed from cumbersome pressure tanks and the network of hoses that connect them. Production is increased because the applicators spray continuously without interruption for changing of tanks.

For more data circle 2 on Reader Service Card

★ ★ ★

Pressure Blast Deburring

Whenever metal is cut, the action of the cutting tool leaves burrs. In finishing, these burrs must be removed. This is often a big order on complex parts where the burr is not easily accessible and on parts where close tolerances and micro-inch finish requirements must be met.

In many of these cases, pressure blast does the deburring successfully. Three factors enable pressure blast to remove burrs without excessive stock removal or loss of finish:

1. The "Fineness" of the Abrasive

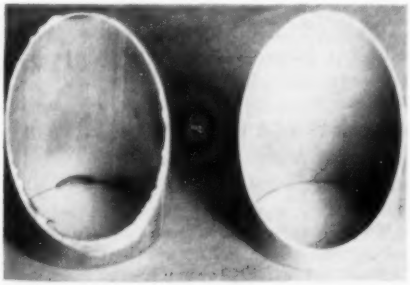
The use of water as a carrier gives mass to fine abrasives which could not otherwise be thrown with sufficient force to finish or cut. Obviously, the finer the grain, the finer the finish obtained. The range of abrasives employed in the process extends from 75 mesh on the coarse side to 5000 mesh on the fine. Abrasives in the higher ranges will generally hold tolerances to 0.0001 inch and micro-inch finishes as low as 4 RMS, since they are microscopic, relatively soft and have no tendency to etch heavily.

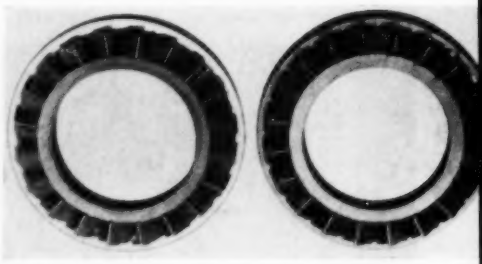
2. Speed of the Abrasive Stream

Non-moving, stationary abrasive particles have no cutting or finishing ability. They must have velocity to abrade. In high velocity pressure blasting, the abrasive water stream achieves a speed of over 1,700 feet per second at the nozzle; a high velocity is maintained over distance. This is important in finishing deep holes or other areas which the gun nozzle cannot reach. In many instances where root thickness and height are at a minimum, burrs may be removed with a blast velocity of 680 feet per second.

3. "Masking" Effect of the Water Carrier

Water's use in pressure blasting is





Typical parts which have been deburred by abrasive blasting. (Top) Jet engine component; (below) cut off burr has been removed from magnesium tubing. Other parts which are being deburred in this manner include brass gears, revolver components, valve components. (Photos courtesy Cro-Plate Co., Inc.)

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Sel-Rex BRIGHT PRECIOUS METALS PROCESSES have unique features which make them ideally suited for the exacting requirements of electronic and electrical industries. Sel-Rex BRIGHT GOLD is particularly desirable because it produces a mirror-bright finish directly from the bath—regardless of thickness requirements. Economical, too, for one gram does the job of 2 grams of conventional 24K gold.

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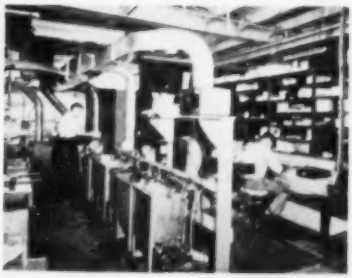
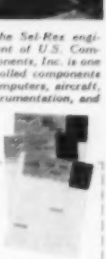


Above photograph shows a section of the Sel-Rex engineered gold and silver plating department of U.S. Components, Inc., New York City. U.S. Components, Inc. is one of the leading producers of quality controlled components for manufacturers of communications, computers, aircraft, guided missiles, portable equipment, instrumentation, and test apparatus.



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For more data circle 207 on Reader Service Card

primarily as a carrier for the abrasives. While so serving, however, the water "hides" much of the surface from the abrasive, exposing only high points or burrs to the blast stream. This effect is great enough to prevent abrasive particles from cutting protected areas severely, while burrs are abraded.

Pressure blast as a method of deburring is basically effective only on true burrs resulting from machining operations. Extruded metal that results from dull tools or poor machining procedures are not considered burrs in the truest sense and generally require metal removal tools rather than metal finishing operations. Flash or parting lines on castings fall into the same category as do heavy drilling crowns and edge "burrs" on simply shaped pieces such as sheet metal sections. Pressure blast works quickly on burr removal or not at all, for the longer the surface is exposed to the blast, the greater the danger of stock removal.

Complete information on pressure blast deburring is given in Application Bulletin No. 3, available from the Cro-Plate Co., Inc., 747 Windsor St., Hartford 6, Conn.

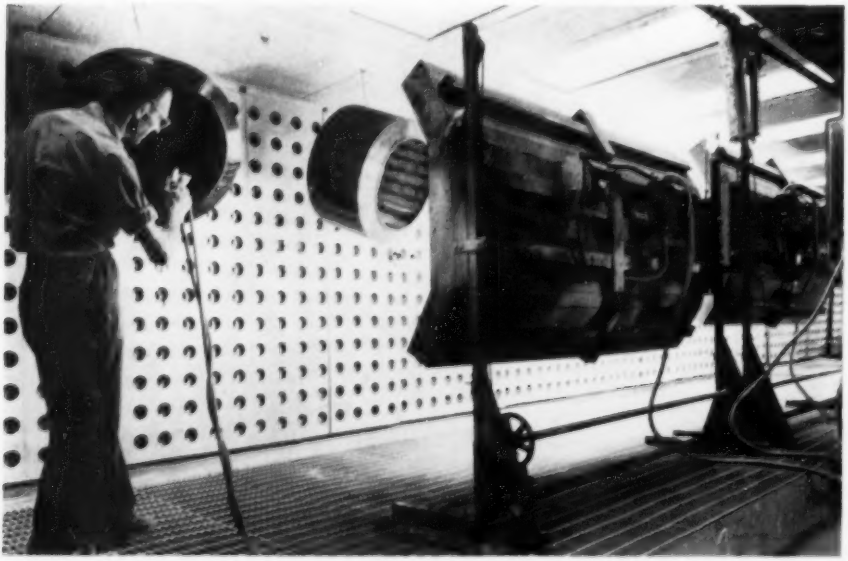
For more data circle **3** on Reader Service Card

★ ★ ★

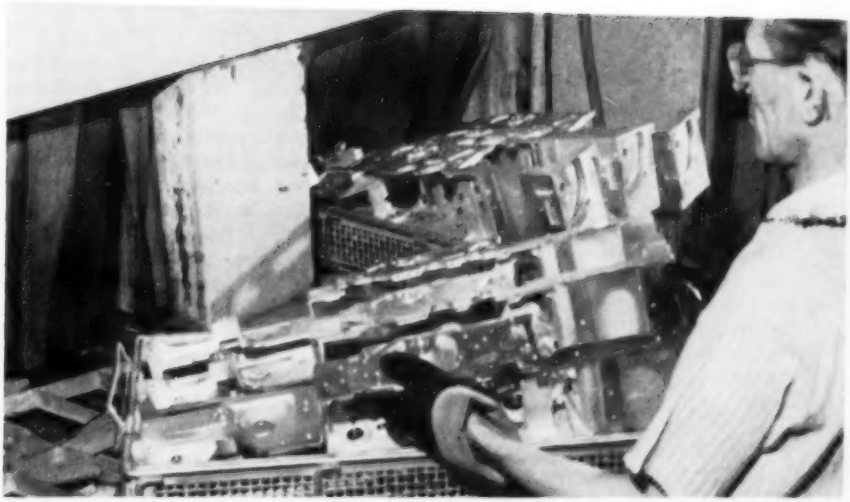
Fast Drying Reduces Runs

The fast-drying characteristics of an infrared oven are used by Westinghouse to temporarily set porcelain enamel on washing machine spinners and roaster pans in the Columbus, Ohio plant. The Fostoria oven installation quickly sets the frit to prevent running into corners and joints of the pieces, thus producing a smoother job.

For more data circle **4** on Reader Service Card



Washing machine spinners pass a bank of infra-red panels immediately after being sprayed with porcelain enamel at Westinghouse, thus setting frit immediately, preventing runs and tears. (Photo courtesy Fostoria Pressed Steel Corporation, Fostoria, Ohio.)



New Non-Foaming, Cleaning Compounds For Spray Washers!

From Magnus "X-3" Series of Spray Washing Compounds, you can now select the one Magnus product that completely answers your particular spray washing problem. Combined with the introduction of the "X-3" Series, Magnus has released Bulletin No. 73 which covers facts on the effectiveness of each product in the line. Get your copy by writing to Magnus Chemical Company, Inc., 208 South Avenue, Garwood, N. J.

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For more data circle 208 on Reader Service Card

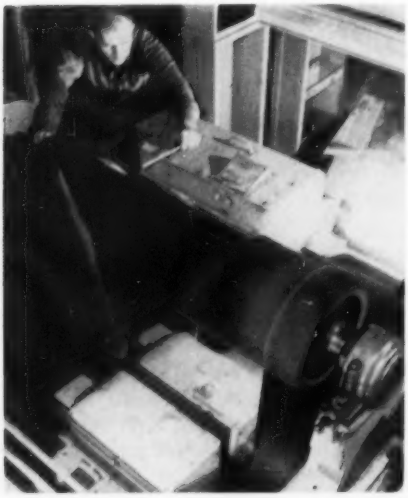
X-ray Gage Measures Coating Thickness

X-RAY GAGES designed and developed by Jones & Laughlin Steel Corporation now have been installed on all three electrolytic tinning lines at the J&L Aliquippa, Pennsylvania, Works.

These patented gages measure the amount of tin being applied to the steel sheet during the plating operation.

They provide a continuous operating check on tin coating thickness—a check that is precise, rapid, and non-injurious to the product. The gage can measure tin coating thickness to within 6/10,000,000 of an inch.

Working with the device is an instrument for recording permanently how much tin actually was applied to a particular steel coil.



Foreman checks distance from the fast-moving tin plate to X-ray tin thickness gage, the newest to be installed on electrolytic tinning lines at the Jones & Laughlin Steel Corporation Aliquippa, Pa., Works. Tin coating thickness is measured on both sides of the tin plate by two gages, one above and one below roll.

One of the three electrolytic lines has been operating with a tin thickness gage installed in 1951. Improvements have been made on that gage, and gages of new design have been installed on the other two electrolytic lines.

In addition to these three gages, a sheet gage, also designed by J&L Research personnel, has been installed in the Tin Mill Metallurgical Laboratory at Aliquippa. This gage is being used as a control for all of J&L's electrolytic tin plate production.

This method of measuring tin thickness makes use of the phenomenon of X-ray fluorescence.

The X-rays are beamed at a sheet of tin plate as it leaves the line at speeds of 700 to 2,000 feet per minute. The X-ray beam causes the steel underneath the tin coating to fluoresce, giving off X-ray radiation.

This phenomenon is similar to the glow emitted by a white shirt after exposure to ultra-violet light, except that iron X-radiation is not visible to the human eye.

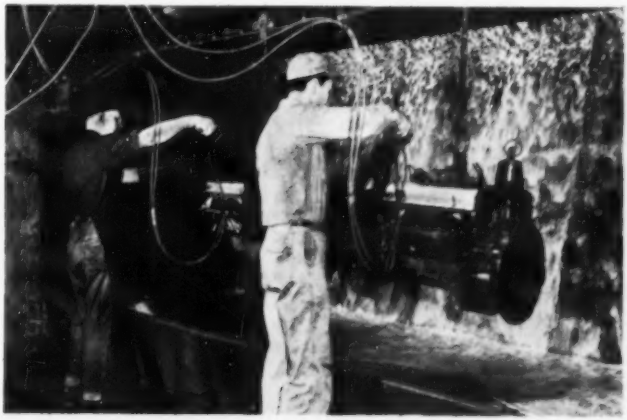
As the iron fluorescence leaves the steel sheet, it is partially absorbed in the tin coating, so that the amount received by a radiation detector will decrease as the tin thickness increases.

Thus the output of the detector is used to determine the thickness of the tin coating.

Equipment making up the gage includes an X-ray power supply and tube, a radiation detector, and necessary amplifying, indicating and recording mechanisms. Incorporated in the gage are features of design that overcome mill problems of wide temperature fluctuation, humid air, and mill vibration.

Conservation of tin during the war was one of the reasons for installation of the first two electrolytic tinning lines. It was in anticipation of the heavy demand for dual-coated tin plate —tin plate with a heavier coating of

"MOST OUTSTANDING PAINT AND COATING DEVELOPMENT IN 50 YEARS"



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For more data circle 209 on Reader Service Card

tin on one side than on the other—that the third electrolytic tinning line was installed.

Dual-coated tin plate is one of the products being produced at Aliquippa. It provides a can material with enough tin to protect against certain corrosive foods on the inside of the can, and yet with no excess of tin on the outside.

J&L has also introduced the use of electrolytic tin plate, in very heavy gages, in the automotive industry. This type of tin plate is being produced in quantity for fabrication of air cleaners, oil filters, and other stamped parts.

For more data circle 5 on Reader Service Card

★ ★ ★

Pickling Tank of Stainless Alloy Withstands Hot Sulfuric Acid

A PICKLING TANK, containing 4 to 8 per cent of 60 to 66 degree Baume sulfuric acid solution at temperatures ranging from 150 to 165 deg. F., has been in operation for 8 years with practically no maintenance.

The tank is used in the process used for galvanizing sheet metal products at The F. H. Lawson Co., Cincinnati, Ohio, and was built in 1947 from Carpenter Stainless No. 20-Cb, a special sulfuric acid-resistant stainless steel. The unit is 2½ feet deep, 4 feet wide and 12 feet long, and has been in constant use, most of the time in a two-shift operation.

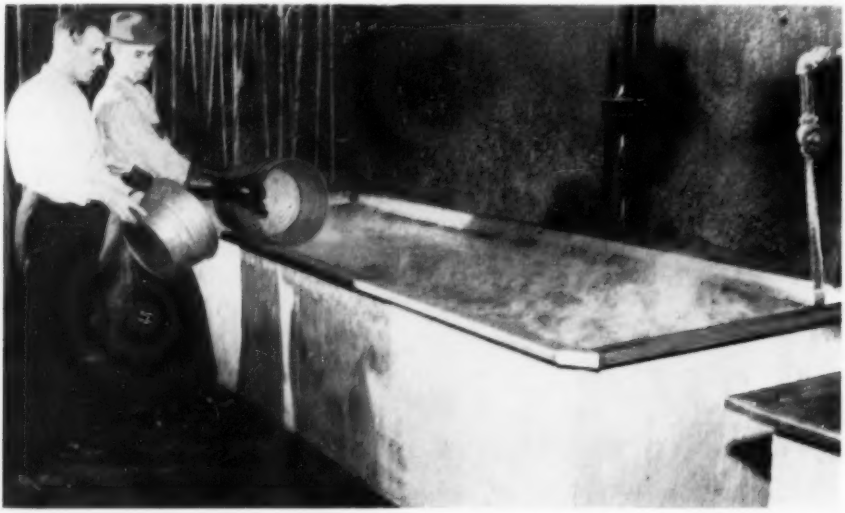
For more data circle 6 on Reader Service Card

★ ★ ★

New Machine Copper Plates Stainless Steel Wire

An electrolytic machine for copper plating stainless steel wire has been installed at Republic Steel Corporation's Union Drawn Steel Division plant in Massillon, Ohio.

The first equipment of its type installed in the cold finishing industry,



Stainless Steel Tank: eight years' exposure to H_2SO_4. (Photo courtesy Carpenter Steel Co.)

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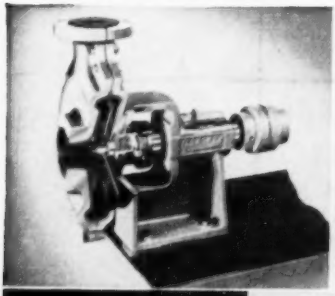
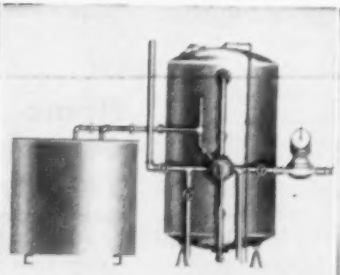
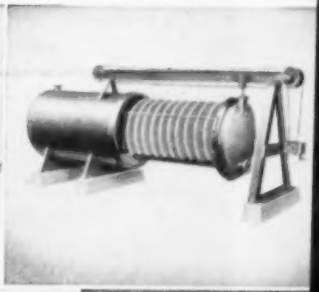
CENTRIFUGAL PUMPS



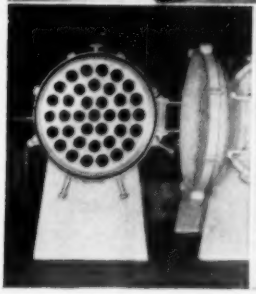
ZEOLITE WATER SOFTENERS



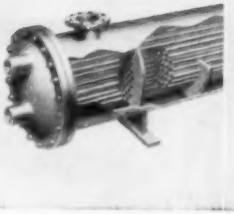
HORIZONTAL FILTERS



NEW . . .
TUBULAR FILTERS



HEAT EXCHANGERS



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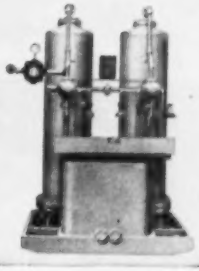
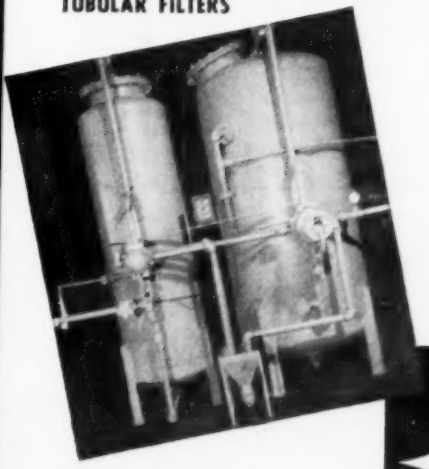


VERTICAL FILTERS



New! Waste Treatment Systems

Recovery systems pay for themselves. Continuously recovers valuable metals and supplies pure water to the rinsing bath. Industrial builds *complete* units to suit your exact needs.

Low cost destruction. Industrial units produce non-toxic waste water at the lowest possible cost. Can be designed for continuous, semi-automatic or manual operation.

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it copper plates stainless wire in diameters from 3/16 inch to ⅝ inch. The copper plating normally varies from 0.0001 inch to 0.0002 inch thick. However, the copper thickness can be varied considerably, as desired.

The single strand machine gives exceptional uniformity of copper plating and practically eliminates the possibility of flaking. In copper plating stainless steel wire, a lack of uniformity and flaking have been major problems.

The excellent qualities of the product from the new electrolytic installation result in maximum lubrication in cold upsetting and extruding.

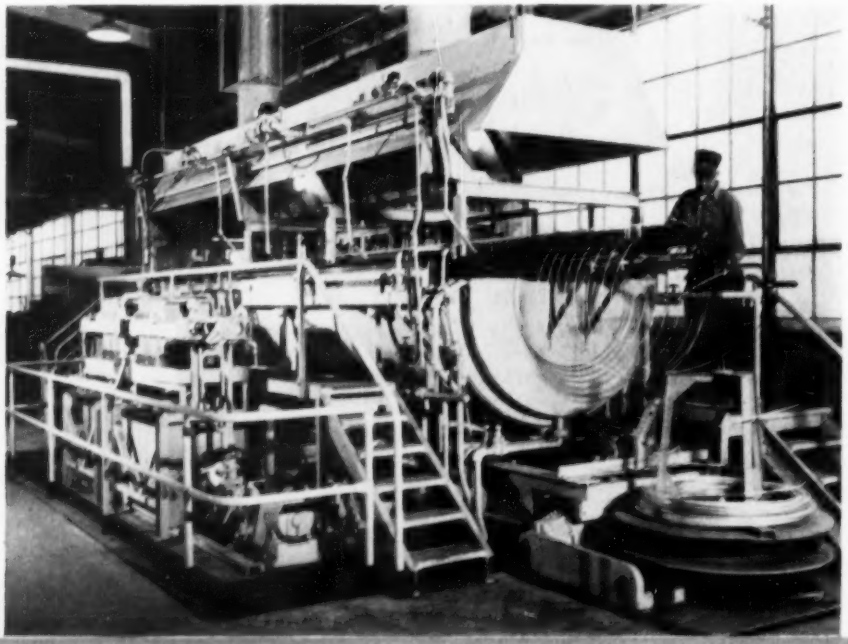
Copper coated stainless steel wire is used primarily for the production of bolts, nuts, screws and other fasteners. End products are used in the aircraft, chemical, automotive, oil refinery, atomic energy and other industries where corrosion-resistant fasteners that stand up under high temperature, critical applications are required.

For more data circle **7** on Reader Service Card

★ ★ ★

Flame Spray Ceramics

A PROCESS FOR COATING a wide variety of surfaces, by feeding powdered ceramic materials through a simple flame gun, has been developed at the Armour Research Foundation of the Illinois Institute of Technology, Chicago, Illinois.



Electrolytic machine for copper plating stainless steel wire. (Photo courtesy Republic Steel Corp.)

Metallic silver is blended on this rich-cream and red-colored escutcheon. Rate: 3,840 pieces per 8-hour day.
The unusual amber color of these TV tuning knobs is highlighted with a mirror-like aluminum film deposited under vacuum. CVC's 30" unit coats up to 16,000 in a 30-hour week.
This escutcheon gives the appearance of flocked silver on a rich blue field. Name and trademark stand out boldly in metallic gold and silver. Four cycles an hour produce 480 pieces.
CROSLEY

Brilliant Escutcheons by the thousands

CVC vacuum metallizing fills heavy production quotas fast

"We are already operating at four cycles an hour with our new *CVC* coater," writes Charles E. Catalde, President, Buffalo Molded Plastics Inc. . . . "When we're ready for increased production, I'm sure we can add another complete cycle without any trouble."

The *CVC* vacuum coater Mr. Catalde speaks of gives a chamberful of parts a brilliant metallic luster in a matter of minutes.

And it doesn't require a skilled operator —a few hours' experience in the use of the machine trains any of your help to turn out flawless pieces in large quantities.

The operator simply inserts racks of lacquered parts into the vacuum chamber, valves in the roughing pump for initial evacuation, and then opens the high-vacuum valve to the diffusion pump.

In seven or eight minutes the chamber pressure reaches the desired level and the operator flashes the filament which evaporates the aluminum. Immediately the aluminum begins to condense on the parts. It's easy. It's inexpensive.

Our sales engineers will be glad to share their experience in vacuum metallizing and associated lacquer operations to help you set up your own system. They will also help you decide which type and size coater best meets your needs.

Write for technical data—Vacuum Coaters—on the complete *CVC* line.

Consolidated Vacuum, Rochester 3, N.Y.

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For more data circle 211 on Reader Service Card

Practical Applications . . .

Coatings resulting from the process, called "Flame Spray Ceramics," are said to have great resistance to heat, and chemical stability.

In many cases, the underlying metal actually can be melted without causing coating failure, according to the Research Foundation.

The technique of application is similar to that required for metallizing processes. Flame Spray Ceramics are sintered layers of refractory and chemically inert materials, such as aluminum oxide or zirconium oxide.

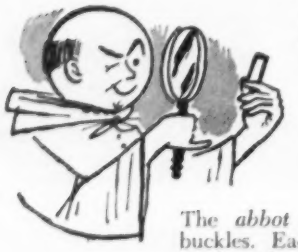
The spray coatings do not require that the metal or other base be heated unduly.

Since the two basic Flame Spray Ceramic coatings — aluminum oxide and zirconium oxide—are stable metal oxides, they cannot oxidize further.

The alumina coating is said to be harder than tool steel and unusually adherent in thicknesses up to about 10 mils. If applied more heavily, residual stresses may cause coating failure on sudden thermal shock.

The coating appears to be effective for protecting metals, such as steel and aluminum, against high temperature erosion such as that encountered in rocket nozzles.

The hardness of the coating suggests its use for protecting soft metals — aluminum, die-cast alloys, or mild steel, for instance — against erosion and abrasion in pump impellers and housings, fan blades and turbines, piping subject to cavitation.



The abbot and the Million Shiny Buckles

The *abbot* studied the small watchband buckles. Each was stamped from stainless steel with nicely defined, square corners, evenly spaced decorative ridges and precisely placed pinion holes.

The little man's visitor wore a worried frown. "How," he asked, "can we put a good, shiny finish on a million of 'em quickly and economically?"

In less than a week, the *abbot* mailed his meticulously typed reply. "Your watchband needs burnishing," he wrote, "Try barrel burnishing with Abbott 3/16" Diagonals. You'll find they are shaped to do the job right. Besides, the Abbott Method is fast, economical and thorough."

Abbott Burnishing Materials make efficient and uniform contact on metal parts and castings of every size and shape. Made from selected carbon steels, they are Deep Hardened with a glass-hard, mirror-like finish. Combined with the Abbott Vertical Barrel, they make the *perfect* barrel finishing combination.

ABBOTT

Let the abbot show you how The Abbott Method can help you. Drop a line to . . .

The ABBOTT BALL Company

1064 New Britain Avenue, Hartford 10, Conn.

For more data circle **212** on Reader Service Card

For greater corrosion resistance at high temperatures . . .

▲ Finished with alkyd enamel

▲ Finished with silicone-based enamel

use Silicone Based Paints...

Here's visual proof of the extra measure of corrosion resistance you can expect from finishes based on Dow Corning *silicone resins*. Additional advantages: better retention of color and gloss at high temperatures; superior weather and mar resistance . . . excellent leveling and anti-flooding properties. Give *your* product the extra sales appeal and protection of a *Dow Corning silicone* based finish.

Want a hammer effect?

Now you can get it easily and economically in most types of resins merely by specifying the addition of a special Dow Corning silicone fluid to your metallic finish! Write for details.

New fact-filled brochure available!

Get complete data on silicone finishes—plus list of silicone paint formulators. Write for your personal copy today.

Dept. 5006

DOW CORNING CORPORATION
Midland, Michigan

DOW CORNING SILICONES — first in silicones

For more data circle 213 on Reader Service Card

Practical Applications . . .

The alumina coating is electrically insulative, and its use in the manufacture of high-temperature process equipment is anticipated. The coating is poorly wetted by certain molten metals, and preliminary tests show it to act as a satisfactory permanent mold coating for aluminum casting.

In this last respect, the zirconia coating is expected to be even better, since it is more refractory and inert than alumina. Although the zirconia coating is somewhat softer and more difficult to apply, its resistance to corrosion and heat is said to be outstanding.

The coating is expected to find use in rockets, flame ducts, burner equipment, and as a liner for troughs, feeders, and other foundry equipment.

Like all sprayed coatings, Flame Spray Ceramics have a residual porosity of about 10 or 15 per cent and alone do not provide perfect protection against chemical corrosion of the underlying material.

However, various additives to the two basic coatings improve their protective action, and this can be improved further by overcoating with recently developed "solution ceramics," or by cospraying with soft metals.

Several other applications of Flame Spray Ceramics already shown to have some value are: thermal protection of engine parts; increasing wear and skid-resistance of metal treads and gratings; coating on graphite for reducing erosion, oxidation, and

INDUSTRIAL OVENS

Ovens Engineered and Designed to meet your particular plant layout and process requirements. Insulated Panel construction on Structural Steel Framing. Designs include: Compartment Type; Horizontal Type; Vertical Type; and "A" Type; floor or overhead mounted with continuous or intermittent conveying—Indoor, Outdoor, or Roof Installations.

For Bulletins and Quotations, write to:

NEWCOMB-DETROIT

5761 RUSSELL ST. • DETROIT 11, MICH.

For more data circle **214** on Reader Service Card

The *NEW* MITCHELL-BRADFORD Emulsion Cleaner #26

A NEW organic emulsion cleaner designed for easy removal of heavy oils, greases and soils.

EMULSION CLEANER #26 is a general utility cleaner which cuts cleaning time when used prior to an alkali cleaner. Emulsion Cleaner #26 will even increase the life of the alkali cleaner.

EMULSION CLEANER #26 softens grease and grime for easy removal with a cold water rinse.

EMULSION CLEANER #26 will easily remove buffing compounds and is ideal for cleaning heavy machinery, airplane bodies, truck bodies, floors, etc.

Advantages

1. High penetrating ability.
2. Softens grease and oil for easy water removal.
3. Ideal for cleaning all ferrous and non-ferrous metals.
4. Economical.
5. Long lasting.
6. Used at room temperature.

For Paint Stripping requirements, investigate our NEW non-inflammable QUICK-STRIP. #8

Mitchell-Bradford

MITCHELL-BRADFORD CHEMICAL CO.
WAMPUS LANE MILFORD, CONNECTICUT

QUALITY PRODUCTS OF CHEMICAL RESEARCH

For more data circle 215 on Reader Service Card

wear; decorative surface coating; "wettable" coating for oil burner pans and grates; Catalyst coating for certain flame equipment; and anti-heat protection for aircraft parts.

Continental Coatings Corporation of Illinois, 2333 S. Michigan Ave., Chicago 16, Ill. has signed a license agreement with the Armour Research Foundation in the service contract applicator field for use of patents.

For more data circle 8 on Reader Service Card

Three Spraying and Baking Processes Used to Finish Heater Motors

An almost completely enclosed conveyorized automatic system for finishing housings of automobile heater motors has been installed by the appliance division of a large automobile manufacturer. It sprays and bakes three coats of paint on the motors after they have been completely fabricated —just prior to shipping. The system was installed by Michigan Oven Co., Detroit, Michigan.

The system includes a conveyor, three spray booths, three ovens and a cooling chamber. A conveyor carries the motors through the entire process in a vertical position on bearing type spindles. The spindles are mounted at six-inch centers on a V-type pulley. At the spray booths, the pulley contacts a powered V-belt, which rotates the spindle and the motor or work piece. This allows the automatic sprayers to evenly coat the parts.

Use The Right Glove For Your Job!

Let PIONEER's "Hand Protection Clinic" help. Send (Attn: Hand Protection Clinic) a complete job description on your company stationery, including dexterity and abrasion resistance requirements, and complete description of chemicals or solvents used. Our solution of your glove problem will assure you of maximum worker protection and comfort at the minimum cost.

Complete PIONEER Catalog available on request

New Flock-lined Neoprene Stanzoil Glove withstands oils, acids, greases, caustics and solvents. Combines dexterity with comfort.

the PIONEER Rubber Company

285 Tiffin Rd. • Willard, Ohio, U.S.A.

Pioneers in Industrial Hand Protection For Over 35 Years

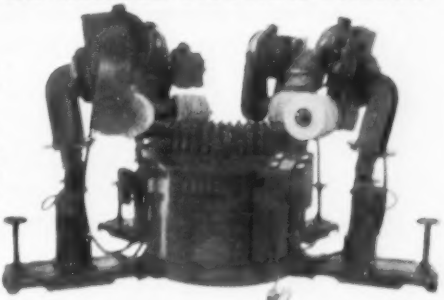
For more data circle 216 on Reader Service Card

"I STILL PREFER MY FOUR-HEADED *PACKER-MATIC*"

Four or more heads on Packer automatics are the answer when polishing, buffing, or deburring production lags in your finishing room.

For handling long production runs, small odd-lot jobs or a mixture of both—Packer-Matics are easily adapted to many change-over setups, produce consistently better finishes in a fraction of hand operation time.

Packer-Matics are designed specifically to perform a multiplicity of jobs with an efficiency that will increase customer satisfaction and profit.



No. 14-4S CONTINUOUS ROTARY

OUR ENGINEERING STAFF INVITES YOUR INQUIRY

PACKER-MATIC

AUTOMATIC MACHINES FOR BUFFING • POLISHING • DEBURRING

THE PACKER MACHINE COMPANY • MERIDEN, CONNECTICUT

For more data circle 217 on Reader Service Card

The three spray booths are of the water wash type and include spark-proof ventilating fans, sludge conveyors, water pump equipment, work rotating mechanisms and automatic triggers for the spray guns, which operate only when the piece is in front of them.

Three steam heated ovens (temperatures: 175 deg. F., 175 deg. F., 125 deg. F.) are equipped with automatic temperature controls, finned steam heating coils, and powered ventilation. Each is a six-pass oven.

A large fan at the end of the system blows room temperature air through a chamber; the conveyor carries the work through this chamber eight or nine times for cooling. Meanwhile, the pieces are inspected for defects. The system produces 2400 units per hour.

For more data circle **9** on Reader Service Card

The ISCC-NBS Method of Designating Colors and a Dictionary of Color Names —By Kenneth L. Kelly and Deane B. Judd, National Bureau of Standards Circular 553. 158 pages. Price, $2.00. (Order from the Government Printing Office, Washington 25, D. C.)

The circular is designed to assist the scientist, businessman, and layman to understand the different color vocabularies used in the many fields of art, science and industry. The dictionary serves not only as a record of the meanings of the 7,500 individual color names listed, but also enables anyone to translate from one color vocabulary to another. For example, the dictionary shows that Griseo-Viridis (biology) = Serpentine (fashion) = Mint Green (mass market), or in ordinary lanugage, a light green.

The terms by which this dictionary defines color names are those of a refinement of the method of designating colors outlined by the Inter-Society Color Council (ISCC) and developed at the National Bureau of Standards. The system applies not only to the colors of drugs and chemicals, for which it was originally developed, but to the colors of all opaque, clear, cloudy, or fluorescent samples.

RAMCO degreasers

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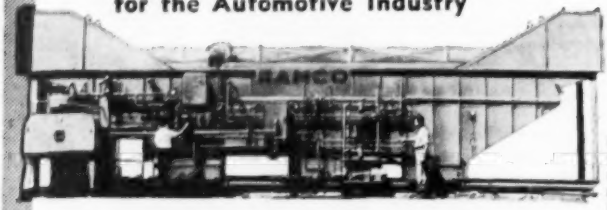
from Laboratory Units to Giants for the Automotive Industry



LABORATORY DEGREASER

GIANT FORD DEGREASER Courtesy Ford Motor Car Co., Detroit

Call on our engineering department for the latest in ULTRA-SONIC CLEANING.

Send for FREE CATALOG. Call your nearest Ramco engineer and have your metal cleaning equipment SERVICED AT NO CHARGE.

RAMCO EQUIPMENT CORP. Div. of Randall Mfg. Co., Inc.
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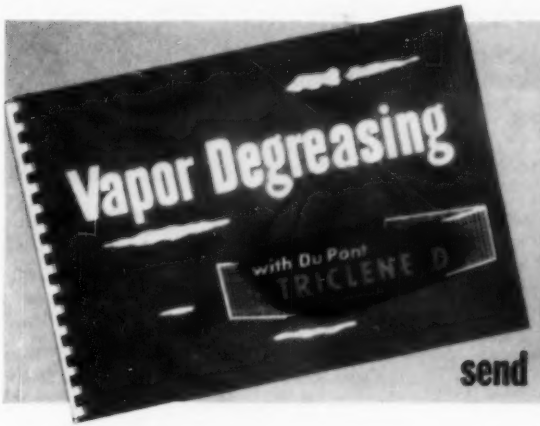
For more data circle **218** on Reader Service Card

Learn how vapor degreasing saves time...cuts costs...boosts production



NEW DU PONT BOOK GIVES PRACTICAL INFORMATION ON METAL CLEANING

send for your copy

"TRICLENE® D cut our downtime by two-thirds," says E. Owen, KIRSCH COMPANY

One of the first users of "Triclene" D was Kirsch Company's Refrigeration Division, Sturgis, Mich. They made "in-use" tests for Du Pont on intricate, many-surfaced refrigerator condensers . . . and have used nothing else since.

Originally, their degreaser had to be cleaned three times every two weeks. Today, using new "Triclene" D with continuous distilling and a degreaser cleanout once every two weeks, Kirsch Company finds that "downtime is cut by two-thirds . . . and cleanouts are easier."

TODAY, vapor degreasing is used for the thorough and rapid cleaning of grease and oil from all types of construction metal.

This new booklet brings you all the latest data on the processes and procedures used in vapor degreasing. In 42 fact-filled pages, you get a well-illustrated and documented story of new developments in vapor degreasing. Here are some of the subjects covered:

- **Vapor Degreasing Principle**
- **Selection of Vapor Degreasing Cycles**
- **Vapor Degreasing Equipment**
- **Properties of "Triclene" D**
- **Applications**
- **Cleaning by Ultrasonics**
- **Vapor Degreasing Costs**
- **Safe Handling of Solvents**

If you would like a copy of this valuable book for your files, just clip and mail the coupon below. The book will be sent to you without obligation, of course.

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TRICHLORETHYLENE

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BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department PF 6
Wilmington 98, Delaware

☐ Please send me a copy of your new vapor-degreasing booklet.
☐ Please have your Representative phone for an appointment.

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____

For more data circle **219** on Reader Service Card

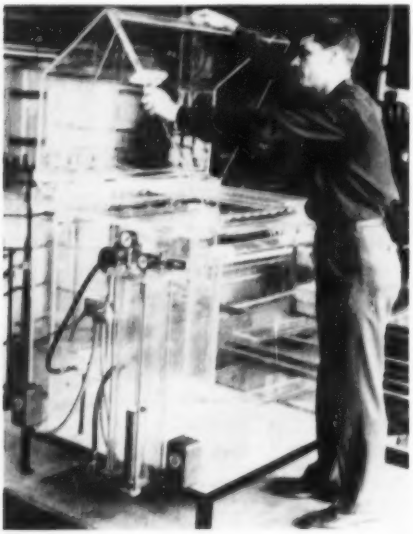
New Equipment, Materials, Processes

› Cleaning
› Polishing
› Plating
› Paint Finishing

Corrosion Test Cabinet

An improved salt spray test cabinet has been announced by The G. S. Equipment Co., 5317 St. Clair Ave., Cleveland 3, Ohio.

Recent refinements in the cabinet design earned "official approval" as meeting A.S.T.M. and U.S. Government Specifications.



Full width "Picture-Window" Water Jacket Heaters on Singleton Test Cabinet improve accuracy, increase visibility, and aid tests.

The redesigned, transparent water jackets which house the 2 electric heaters, front and back, are extended to full width of cabinet. Added area covered by the water jackets maintain more uniform temperatures throughout cabinet. Test specifications allow tolerance of minus 3, plus 2 deg. F. The Singleton Cabinet holds to plus or minus ½ deg. F.

Extra insulating effect prevents excessive fogging or condensate on transparent walls, permitting clear visibility into entire cabinet. Progress of tests can be observed, front and back, through these water-jacket "picture windows" without opening lid, interrupting the process or handling specimens. This is advantageous in short tests of less-protective coatings.

For more data circle 10 on Reader Service Card

★ ★ ★

Small Polishing Wheels

Small "PG" wheels designed for polishing metal with portable hand tools have been announced by Minnesota Mining and Manufacturing Co., 900 Fauquier St., Dept. FH-46, St. Paul 6, Minn.

Small PG Wheel being used for hand polishing. Scratch pattern in the foreground was made by a grit 50 disc used for leveling the surface. Surface in background was produced by grit 50 PG Wheel on portable polisher.

The wheels, which have the same basic design as the large polishing and grinding wheels introduced earlier, are composed of die-cut pieces of coated abrasive cloth, bonded with resin and locked into a hub.

The wheels are suitable for use in stainless and sheet steel fabricating, metal polishing, plating, and tool and die industries. They are intended for rust or dirt removal, blending patterns left by disc sanders, weld polishing, featheredging for spot painting, and similar polishing operations.

Small "PG" wheels are especially suited for polishing soft metals such as lead and solder because the coated abrasive cannot become filled. The mineral grains and the backing wear away together, presenting an always-new surface to the work. This action assures a constant polishing pattern, since mineral grains never become dull; and the rate of cut is constant through the life of the wheel.

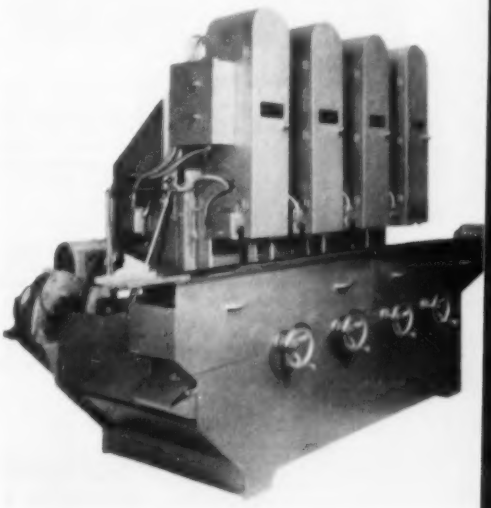
The coated abrasive wheels are designed for use on portable grinders, flexible shaft equipment or small bench-type grinders. They are available in 6 to 10-inch diameters, with 1, 1½, 2 and 3-inch face widths, and in an 11-inch diameter in 2, 2½ and 3-inch face widths. The wheels are currently being made with aluminum oxide or silicon carbide mineral on a cloth backing, in grits ranging from 50 through 320.

For more data circle 11 on Reader Service Card

★ ★ ★

Conveyor-Type Belt Grinder

A contact wheel abrasive belt machine that permits four simultaneous grinding operations, has been introduced by the Engelberg Huller Company, 831 W. Fayette St., Syracuse 4, N. Y. Designed for high-volume flat surfacing of ferrous and non-ferrous metals, glass, plastics, ceramics and other materials, the four-head Model 680-4 belt grinder produces micro-inch finishes to exacting tolerances, and makes possible a single-cycle operation from rough



Engelberg Huller contact wheel abrasive Belt Machine permits 4 simultaneous operations, is suitable for automatic production lines

casting to polished part.

Typical multiple grinding sequence, using a series of progressively finer belts is: rough grind, two semi-finishes, and finish grind. One pass under the four heads can remove an approximate maximum of 0.020 inches of steel stock, up to 0.060 inches of other materials.

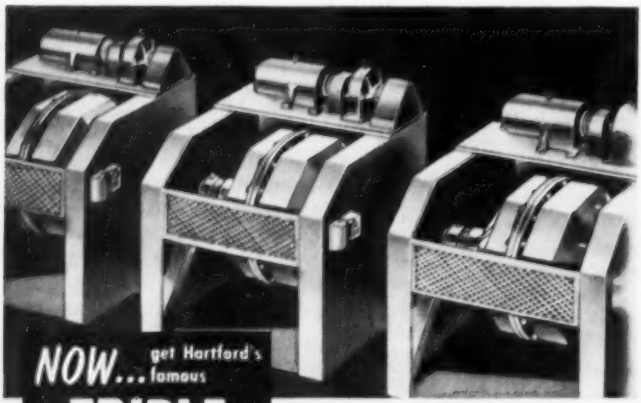
The Model 680-4 is applicable to both wet- and dry-belt grinding. Approximate capacity of cooling unit, equipped with ½ h.p. coolant pump, is 100 gallons.

The machine is suitable for automatic production lines. Parts can be conveyorized for presentation to the conveyor belt, automatically ejected, and carried to next operation. Size of machine conveyor belt is 6½ inches by 216 feet. Quick manual adjustment of conveyor belt speed is obtainable for settings of from 2 to 25 feet per minute.

Abrasive belt size is 6 by 80 inches, and abrasive belt speed of individual heads is constant at 5500 s.f.p.m. Belt tension is adjusted with a control wheel; and for extra operator safety, the machine will not run unless belts are tensioned.

The 680-4 has a maximum piece capacity of 5 inches high, 6 inches wide, any length. Heads are powered with either 5 or 7½ h.p. drives, and the machine can be modified for five- and six-head applications. Magnetic chucks are optional.

For more data circle 12 on Reader Service Card



There's a new look in Hartford's Tumbling Barrels... but underneath you get the famous Triple Action Barrel originated by Hartford and unsurpassed for doing a better job ...faster... at lower cost.

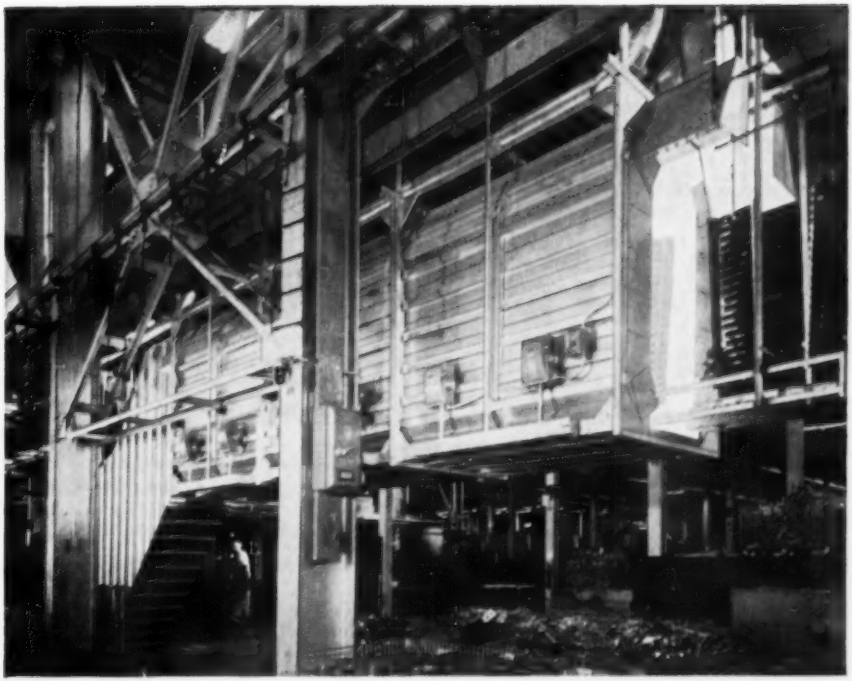
Compare these advantages! The Hartford fully enclosed Model 1956 is extremely compact...requires less floor space than most enclosed barrels. With Hartford the power unit is on top, where it belongs for long life, cleanliness and ease of maintenance. Barrel is mounted on rugged "A" frame for maximum strength. Streamlined steel enclosure confines splash and contributes to safe operation. Pivoted front guard opens to permit quick, easy loading and unloading . . . plus easy removal of barrel assembly. Standard power unit has four speed gear shift transmission. Literature and prices promptly furnished.

Hartford

PRECISION BALLS • RETAINERS
BEARINGS • TUMBLING BARRELS

THE HARTFORD STEEL BALL CO., INC.
14 Jefferson Avenue W. Hartford 6, Conn.

For more data circle 220 on Reader Service Card

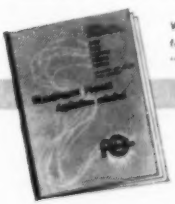


Fostoria Radiant Oven at Westinghouse, Columbus, Ohio

PROCESSES 24,000 PARTS EVERY WEEK

It takes only 15 minutes to dry refrigerator back-plate condensers for stacking—at the Columbus, Ohio Westinghouse plant, a recent addition to the company's Electric Appliance Division.

Using a fast-drying Fostoria Radiant Oven, this modern plant is able to process 10,000 to 12,000 condensers for major appliances, plus the same number of miscellaneous small parts, every 5-day week. In thousands of similar industrial applications, Fostoria Radiant Ovens speed up production, save valuable man-power . . . and cut operating costs as much as 50%. Fostoria design permits overhead installation to save work space (as shown above) and allows easy relocation, if necessary. Want to know how an efficient Fostoria Radiant Oven can save money and improve product quality *for you?* Send for complete details today!



Write for free, fact-filled booklet—
"Applications Unlimited"

fostoria RAPID-RED SYSTEM

FOSTORIA PRESSED STEEL CORPORATION • Dept 622, Fostoria, Ohio
Pioneer manufacturer of radiant equipment—from components to complete ovens

For more data circle 221 on Reader Service Card

Ceramic Coating

Porcelox, a product of Kraus Research Laboratories, Cockeysville, Md., is a water-base, inorganic, semi-porcelain ceramic which on curing forms a hard, heat resistant coating for the protection of metal surfaces against corrosion under conditions of heat up to 1100 deg. F. It has good thermal shock resistance and stands impact well. It is unaffected by oxidation or sunlight.

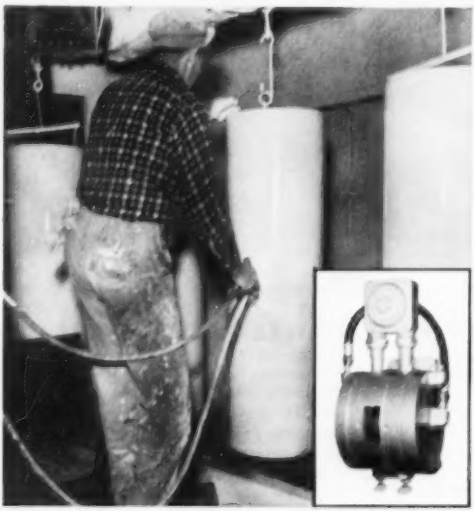
Porcelox can be used, for example, as a coating for exhaust manifolds, exhaust pipes and mufflers for internal combustion engines; on fire doors of furnaces and boilers; and, in general, where iron and steel, either cast or wrought, are subject to rusting due to high temperature.

Porcelox may be brushed, sprayed or dipped. Two coats are usually desirable with complete air dry between coats. It is important to work out all "tear drops" or "loafing" to prevent blistering during cure.

After air drying, curing is accomplished by subjecting the object to an oven temperature of 450 deg. F. for 15 minutes, or longer depending upon the mass of the object. An oven temperature up to 750 deg. F. will produce harder coatings. In special cases, such as exhaust manifolds and fire doors, curing is accomplished automatically by the heat encountered in use. It is not desirable to expose Porcelox to weathering before curing.

The coating cures to a smooth, lusterless, matte finish. It is available in black and dark green colors, and also

Hot Spray Ups Production for Water Heater Manufacturer



Rheem's Houston plant uses hot spray heaters in all its product finishing operations. Before installation of hot spray, rejects were an important factor, especially with temperature and humidity changes. When hot spray units were installed, water heater rejects were cut to less than 3%, according to Rheem management.

Rheem uses Spee-Flo Heaters in electrostatic finishing, and lithographing of drum products, for viscosity control. Results: lithograph rejects cut to less than .3 of 1%, a nearly perfect record. For booklet write Spee-Flo Co., Dept. PF-9, 720 Polk, Houston, Texas.

For more data circle 222 on Reader Service Card

This man is helping cut small parts drying time just about one-half . . .

Model 20 New Holland KREIDER Centrifugal Dryer

AIR-DRIES...as it SPIN-DRIES!

Now you can *spin-dry* small parts in continuous *fresh air* in as little as 15 seconds . . . cut drying time *just about one-half*.

Double-action drying gives you smooth moisture-free surfaces . . . reduces your finishing problems by eliminating the scarring and marring frequently responsible for costly "rejects."

Speed production . . . cut costs way down with New Holland's easy-to-run Model 20 Kreider Centrifugal Dryer.

Choose from 3 models engineered to meet your requirements: — Standard Model; Standard Model with Supplementary Electric Heat; Standard Model with Supplementary Steam Heat.

— SPECIFICATIONS: —

1 h.p. motor — 220, 440, 550 volts — 2- or 3-phase — spins 75 lb. loads at 825 r.p.m. . . . Quiet V-belt drive . . . 30-blade suction turbine draws air through spinner . . . Arc-welded steel-plate construction . . . Heavy-gauge woven steel mesh basket . . . Weight: 490 lbs. . . . Floor space: Just under 5 sq. ft. . . . Meets N.F.C. Specs. **Optional:** J.I.C. Control: Mounted on right, left side or wall. 160° supplementary heat: 2350-watt Chromalox, or steam.

Send for illustrated 4-page folder.
Address Dept. F-66
New Holland Machine Company
New Holland, Pa.

New Holland Machine Company

For more data circle 223 on Reader Service Card

in a graphited formulation. The graphite additive furnishes lubrication in special cases where hot metal surfaces slide or rub together. Porcelox coatings may be heated to 1000 deg. F. and quenched in cold water repeatedly without cracking or spalling.

For more data circle **13** on Reader Service Card

★ ★ ★

Thermostatic Water Mixer

A thermostatic mixer that guards against its own failure has been announced by the Powers Regulator Co., Skokie, Ill.

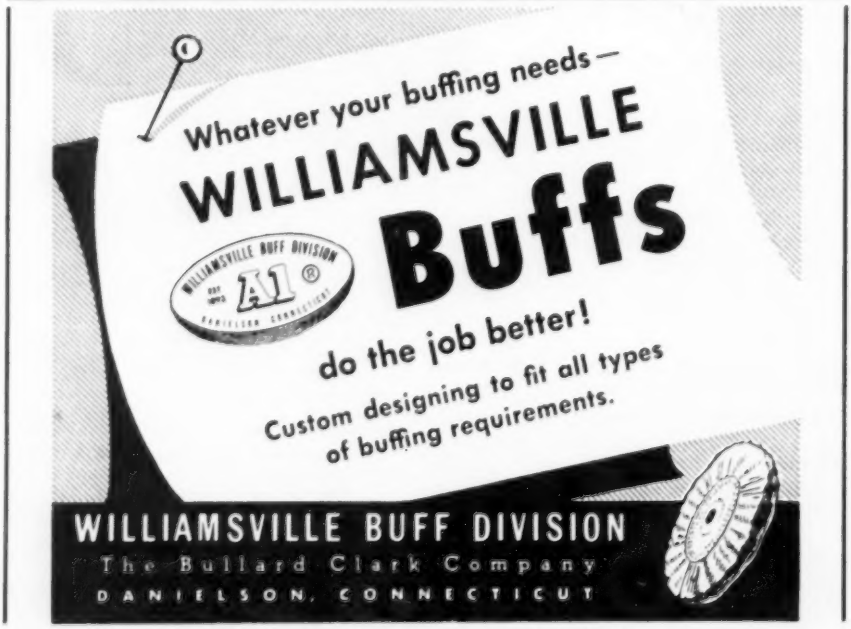
Called the Type N Hydroguard, the thermostatic mixer is used wherever control of water temperatures is required, such as in metal processing.

The Hydroguard automatically shuts the hot water port if the cold water supply fails, or closes the cold water port if the hot water supply fails.

Powers Type N Hydroguard Water Mixer

Should the thermostatic liquid-filled motor itself fail, a "Fail-Safe" provision automatically closes the hot and cold water poppets.

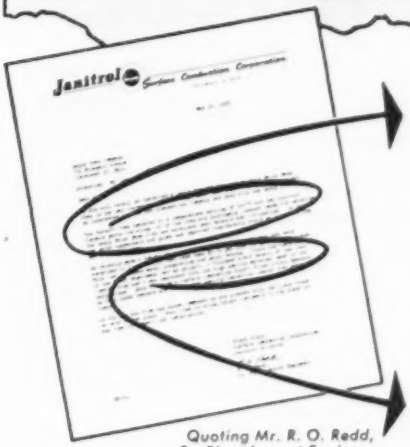
Accuracy of the mixer holds the water delivery temperature to within



For more data circle **224** on Reader Service Card

Janitrol Surface Combustion Corporation

COLUMBUS 16, OHIO



Quoting Mr. R. O. Redd,
Sr. Plant Layout Engineer

The LANLY Paint Bake Oven

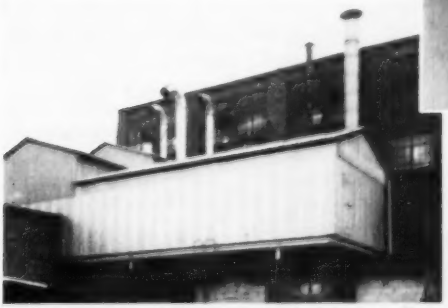
HAS EXCELLENT HEAT BALANCE AND CIRCULATION. IN FACT OUR PAINT APPEARANCE AND GLOSS HAS IMPROVED CONSIDERABLY SINCE WE INSTALLED THE NEW LANLY BAKE OVEN

I was impressed with the high quality material used in the Lanly ovens.

Another of the nation's leading manufacturers attests to the efficiency and multi-fold merits of their LANLY OVENS.

Illustration below shows the ingenious manner in which LANLY engineers with the cooperation of The Surface Combustion organization, circumvented the problem of available factory floor space.

Showing a partial conveyor run in the LANLY low temperature paint bake oven.



YOU TOO CAN DO A BETTER JOB WITH LANLY OVENS

Write for the Lanly Catalog

LANLY FINISHING OVENS

THE LANLY COMPANY • 770 PROSPECT AVE
CLEVELAND, OHIO

For more data circle 225 on Reader Service Card

how to make paint stick *to non-ferrous metals*

Successful application of paint to non-ferrous metals depends on more than cleanliness prior to painting and the quality of organic film used.

Many non-ferrous metals are highly reactive with the paint films used to protect or enhance them, especially in the presence of moisture. Metallic soaps are readily formed and in their formation destroy the protective film.

KENVERT CHROME SEALER films have been developed to stop this activity and eliminate this type of difficulty. These KENVERT finishes are available to brighten as well as protect zinc, cadmium, copper and brass. Finishes are also available that offer excellent protection, with no brightening to the above metals and aluminum. All finishes are produced in simple, short, dipping operations—requiring no expensive equipment or racking.

Send us detailed information on your requirements. Our laboratory is ready to consult with you or treat samples at no obligation.

CONVERSION CHEMICAL CORPORATION

102 E. MAIN ST., ROCKVILLE, CONNECTICUT

For more data circle **226** on Reader Service Card

plus or minus 2 degrees under any of these conditions:

1. A 75 per cent drop in inlet pressures.
2. A 45 degree fluctuation in hot water supply temperature.
3. An 85 per cent restriction of discharge flow.

The Hydroguard is factory set to deliver water at any temperature between 65 and 115 deg. F. An 85-160 deg. F. range can be furnished on order. Maximum temperature settings can be lowered by a simple adjustment, which can be locked to prevent tampering.

Other features of the N Hydroguard:

1. Balanced valves, which provide positive shut off by contact between self-aligning bronze poppets and valve seats. This eliminates stem binding or water leakage.

2. Integrally-built check valves. These prevent interchange of hot and cold water supplies. Spring loaded, they operate in any position.

3. Bronze strainers, which can be removed for cleaning without breaking connections or removing unit from line.

4. Stop valves built into the mixer, which permit the unit to be serviced without shutting off the water.

5. Easy maintenance. The Hydroguard can be completely dismantled without removing it from the line, using only standard wrenches. Check valve seats and poppets are also removable in the field.

Detailed information is given in Bulletin 362, available from the Powers Regulator Company, 3434 Oakton St., Skokie, Ill.

For more data circle **14** on Reader Service Card

★ ★ ★

Industrial Gloves

A line of industrial gloves called Pacemakers, recently announced by the Pioneer Rubber Co., 285 Tiffin Rd., Willard, Ohio, incorporates several design and other improvements.

New THERM-X IMMERSION HEATER

BUILT-IN CONTROL... for FAST, LOW COST, OPERATIONS

- CORROSION RESISTANT
- ACCURATE and DEPENDABLE TEMPERATURE CONTROL
- LENGTHS FROM 12" to 48"
- RATING—from 500 to 5000 WATTS and 115 — 230 VOLTS
- AVAILABLE IN QUARTZ or STAINLESS STEEL

Send for
descriptive literature

Manufacturers of a complete line of radiant and immersion heating equipment.

N. J. THERMEX COMPANY INC.
537 BERGEN STREET, HARRISON, NEW JERSEY

For more data circle 227 on Reader Service Card

Pioneer Rubber Gloves protect hands from plating solutions and withstand abrasion

Each glove in the Pacemaker line is made of neoprene coated flannel in three different weights: light, industrial and heavy duty. In addition, there is a choice of knit wrist and 12-, 14½-, and 18-inch gauntlet styles.

A heavy duty "Hot 'N Cold" glove incorporates two 8-ounce shells, face-to-face napping for extra insulation, double-napped inner lining, bar-tacked fingertips and non-ravel lockstitch binding on gauntlet.

Pacemakers are suggested for jobs where resistance to abrasion and chemicals is important; jobs where gloves will encounter acids, caustics, solvents, greases or oils; and for handling metals during metal working and finishing.

For more data circle **15** on Reader Service Card

★ ★ ★

Drum Upender

A device designed to aid in upending loaded drums has been announced by Morse Manufacturing Co., Inc., 762 W. Manlius St., East Syracuse, N. Y.

INCREASE PAINT SPRAY BOOTH EFFICIENCY .... AND SAVE TIME, FLOOR-SPACE, MONEY!

Photo Courtesy Argo Lamp Co., Philadelphia, Pa.

... with R P Paint Arrestors!

The Argo Lamp Co. found RP Paint Arrestors more efficient, more economical in arresting paint overspray than the more elaborate and expensive system previously used. Investigate the many advantages of these inexpensive, replaceable pads to increase booth efficiency, reduce floor-space requirements and maintenance costs.

WRITE TODAY

RP ... PRODUCTS OF RESEARCH

Research Products Corporation

Dept. 38, Madison 10, Wisconsin

For more data circle **228** on Reader Service Card

Photo courtesy Mitchell-Bate Co., Waterbury, Conn.

What's being lowered here?

Costs! With Unichrome Coating 218X, of course!

SAVINGS START soon as users lower racks and baskets into Coating 218X. This approved vinyl plastisol provides insulation that lasts phenomenally long. It withstands toughest plating and cleaning cycles, even vapor degreasing cycles. It won't chip, tear, blister . . . won't contaminate baths. Coast to coast, platers know how it cuts maintenance to the bone, saves most time and money in the end.

If you want a nearby, experienced firm specializing in plastisol application to do the job for you, we'll gladly supply names.

UNICHROME

METAL & THERMIT

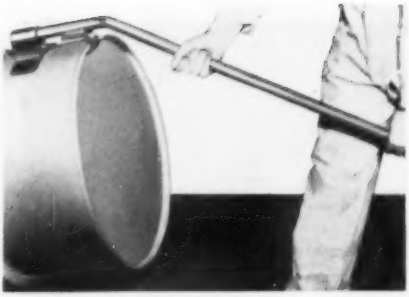
CORPORATION

General Offices: Rahway, New Jersey

Atlanta • Pittsburgh • Detroit • Chicago • Los Angeles

In Canada: Metal & Thermit Limited (Chairman of Canada, Limited), Toronto

For more data circle **229** on Reader Service Card



Morse Drum Upender Aids Drum Handling

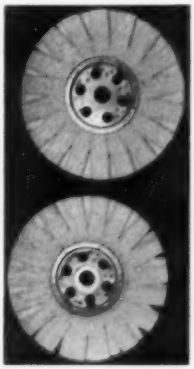
The Drum Upender has a 40-inch handle, offset 35 degrees for maximum efficiency in raising drums from horizontal to vertical. A 1¼-inch hook provides adequate clearance for the largest chime. A 2½ by 8-inch toe plate spreads lifting pressure over a large area to prevent drum damage.

For more data circle **16** on Reader Service Card

Buffs

Fast, thorough cutting and coloring of intricate contoured metal surfaces is provided by a line of cloth and sisal buffs announced recently by Hanson - Van Winkle - Munning Co., Matawan, N. J.

Cloth and sisal "Sisal-Flex" buffs and cloth "Tufta-Flex" buffs are designed for heavy and medium metal-finishing processes. The buffs will cut and color metal in a single operation, the manufacturer states.



Sisal-Flex (top) and Tufta-Flex Buffs.

Both types of

Rhodium
ELECTROPLATING SOLUTIONS
SINCE 1901

Rhodium Plating for jewelry offers the advantages of whiteness, lustre and corrosion resistance . . .

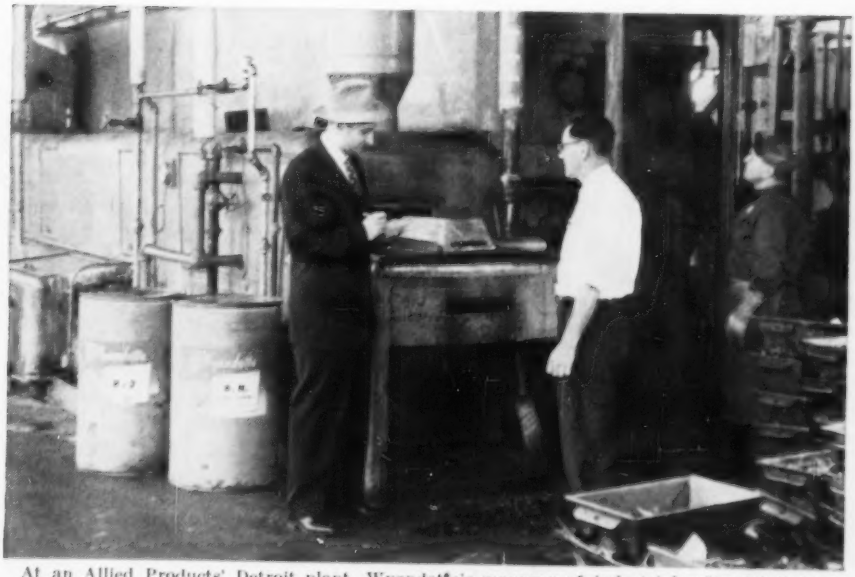
For electrical and other applications: protection from corrosion in air or unusual conditions . . . Particularly recommended for printed circuits and contact surfaces . . .

Can be applied to many surfaces from less than one to one hundred milligrams per square inch . . .

Consult our staff, without obligation, about your specific plating problems.

SIGMUND COHN MFG. CO., INC.
121 SOUTH COLUMBUS AVENUE · MOUNT VERNON, NEW YORK

For more data circle **230** on Reader Service Card



At an Allied Products' Detroit plant, Wyandotte's manager of industrial sales, Ed Kubis (left), and Plant Engineer John Rhodes discuss effectiveness of Wyandotte BN as a metal cleaner and Wyandotte R-2 as a rust preventer.

Allied Products cleans 8000 lbs. of forgings an hour with Wyandotte BN!

Serving the construction industry and 75% of the automotive industry with cold-forged bolts and fasteners, Allied Products Corporation, Detroit, Michigan, has been a Wyandotte customer for nearly 15 years.

Allied Products is sold on Wyandotte metal cleaners — using BN for tumble-washing parts before heat treating, and R-2 in the water rinse for in-plant rust protection. This is done in a combination belt-and-drum type washing machine, which cleans and rustproofs both the tote pans and cold forgings. Here, 8000 lbs. of parts are cleaned every hour — 24 hours a day. Always pleased with Wyandotte service, Allied Products likes the way versatile Wyandotte BN does an efficient, round-the-clock cleaning job, prevents rejects.

A free-rinsing industrial detergent — with high soil tolerance, and controlled uniform quality — Wyandotte BN has a silicate-synthetic detergent base formulation for long life, maximum detergency.

For information about BN or any Wyandotte metal-cleaning products, contact our nearest representative. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California. Offices in principal cities.*

Wyandotte CHEMICALS

J. B. FORD DIVISION

Specialists in metal-cleaning products

For more data circle 231 on Reader Service Card

buffs utilize double-folded tufts to provide maximum cutting surfaces and retain compound at leading edges and on the buff circumference. Tufts are staggered in a double row around the buff to prevent streaking. This also makes the buff self-ventilating, for cooler operation.

All cloth and sisal used in these buffs is cut on the bias, to ensure greater strength and longer life. This also eliminates the problem of loose ends which can scratch, cut or gouge the surface of the metal.

A steel center, composed of two steel discs, provides strong support for each buff. Steel clamps around the circumference of discs hold the buff in place. Added strength is assured by heavy-duty stitching around the buff's inner circumference. The steel discs are multiple spot welded together. Six ventilating holes assure free circulation of air from the center of the buff to its periphery.

Sisal-Flex — Sisal-Flex buffs are made of top-grade sisal cloth covered with bias cut cotton cloth. Four rows of stitching on each tuft, plus the double-fold construction, keep the cloth from fraying and increase buff life. These buffs are suitable for hard and heavy cutting of steel and stainless, the company reports.

Tufta-Flex—These buffs are made of 86-93 bias cut cotton, with each tuft stitched twice to assure greater flexibility of the buff. Tufta-Flex buffs can be used for fast cutting-coloring jobs that do not require a buff as rugged as the Sisal-Flex. Tufta-Flex produces a smooth metal finish and can be used on any medium to heavy metal-finishing job.

Both Sisal-Flex and Tufta-Flex buffs are available in diameters ranging from 12 to 18 inches.

For more data circle 17 on Reader Service Card

GLOSS
WHITE
BAKING ENAMELS
SEA-LAC
SURE'NUF!
You'll get the white that's right for washing machines, refrigerators and other appliances—right from our stock. Perfect in color...and perfected for resistance to soaps, detergents and abrasion. Also in heat-resistant, non-yellowing grade.
SEA-LAC
DURALAC CHEMICAL CORP.
84 LISTER AVENUE, NEWARK 5, N. J.

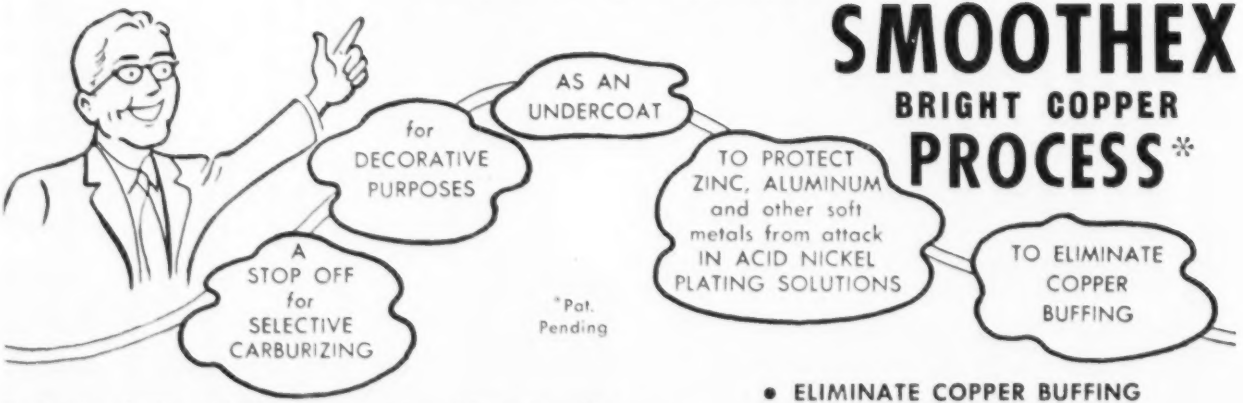
For more data circle 232 on Reader Service Card

You'll Plate Parts Faster *AT LOWER COST*

when You USE The

SMOOTHEX

BRIGHT COPPER PROCESS*


AS AN UNDERCOAT
for DECORATIVE PURPOSES
TO PROTECT ZINC, ALUMINUM and other soft metals from attack IN ACID NICKEL PLATING SOLUTIONS
TO ELIMINATE COPPER BUFFING
A STOP OFF for SELECTIVE CARBURIZING
*Pat. Pending

End your plating solution troubles, now! Switch to the amazing new SMOOTHEX BRIGHT COPPER PROCESS for greater brilliance, speed and top quality, lower cost runs. Your present equipment can quickly and easily be adapted to the Smoothex Process. Send a sample of your plating solution to us, at once, for conversion information.

- **ELIMINATE COPPER BUFFING**
- **SAVE NICKEL**
- **EASE OF CONTROL**
- **GET INSTANT SPECULAR BRIGHTNESS**
- **ENJOY LOWER MAINTENANCE COST**
- **LOWER OPERATING COST**
- **HAVE ADAPTABILITY**

• ***Excellent Territories Still Available*** •

SMOOTHEX, INC. 10705 BRIGGS ROAD CLEVELAND 11, OHIO

For more data circle **233** on Reader Service Card

Steam Trap

Sarco ⅜-inch Thermodynamic Steam Trap

The Sarco Thermodynamic Steam Trap is now available in the ⅜-inch size as well as the ½, ¾ and 1-inch sizes.

Slightly larger than a 50-cent coin, this steam trap is suited for applications such as tracer lines. It is designed to withstand water hammer and corrosive condensate and to operate on light or heavy loads against back pressures up to 50 per cent of the inlet pressure. It closes tight on no load.

The tray is a product of Sarco Co., Inc., Empire State Bldg., New York 1, New York.

For more data circle 18 on Reader Service Card

Anti-Mist Additive

A concentrated liquid additive for use in chromium plating baths to reduce chromic acid mist and decrease chromic acid consumption has been announced by R. O. Hull & Co., Inc., 1304 Parsons Ct., Rocky River 16, Ohio.

Physical effect of this material, called Super Power No-Cro-Mist, is to lower the surface tension of the bath. In so doing it lessens the amount of fumes given off and thus safeguards health and makes working conditions more favorable.

An Addition Agent Pump produced by R. O. Hull can be used to make additions automatically of this and other additives to plating baths. Constructed of polyethylene, this pump has an electrically timed rate control, which maintains optimum concentration of additions to the bath while in operation.

For more data circle 19 on Reader Service Card

Metasurf CORPORATION

with us, SERVICE is more than a word

ECONOCOTE . . . clean, etch, phosphate in one operation

METACOTE . . . 3 stage cleaning and phosphating process. Tops in quality . . . bottoms in cost, control, and maintenance

STRIPPERS . . . for the toughest jobs . . .

CLEANING COMPOUNDS . . . tailor made . . .

Write for Literature

Metasurf Corporation

12830 Eaton Avenue • Phone BRoadway 3-3880 • Detroit 27, Michigan

For more data circle 234 on Reader Service Card

"The New BELKE DOUBLE OSCILLATING CYLINDER

gives us

"more uniform distribution of plate according to quality control checks

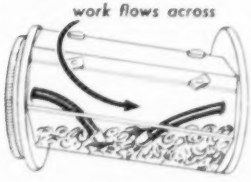
"noticeable color improvement on brass plating

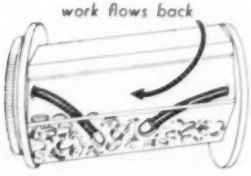
"20% increase in load sizes."

Says Paul Glab,
Superintendent of Plating,
Northwestern Plating Works, Chicago.

Improved Quality Control and increased production with lower cost are a cinch with this new BELKE Plating Cylinder.

The cylinder oscillates as it rotates





all sides of all parts are equally exposed to plating current. No part of the load stays at the ends where little plating occurs. No parts stay buried with greatly reduced exposure to plating current

Do you realize that this 20% saving in plating cost is all profit you are not getting now!

NORTHWESTERN
PLATING WORKS

3114-26 SO. KOLIN AVE. • CHICAGO 23, ILL.

March 23, 1956

Belke Manufacturing Co.
947 N. Cicero Avenue
Chicago 51, Illinois

Gentlemen:

In reply to your inquiry, our Belke Double Oscillating Plating Barrel is giving much greater improvement in plating results than we had anticipated.

Quality control checks show plating thickness is much more uniformly distributed. The over plating of some parts and under plating of others, that occurs with conventional plating cylinders, is avoided.

The improvement is particularly helpful in plating washers and other flat parts which so often come through partially plated because the parts stick together.

We have used the double oscillating barrel on brass, zinc, and cadmium plating with equally good results. On brass plating work it gives a noticable improvement in color.

In addition, we have increased the load size 20% while turning out the best plating work we have ever produced.

We consider the new Belke barrel an important asset to our operation and will be glad to show it to other platers who are interested.

Very truly yours,

NORTHWESTERN PLATING WORKS
Paul Glab
Paul Glab, Supt. of Plating

Ask your BELKE Service Engineer or write for literature.

Belke Manufacturing Company
947 N. Cicero Ave., Chicago 51
EVERYTHING FOR PLATING PLANTS

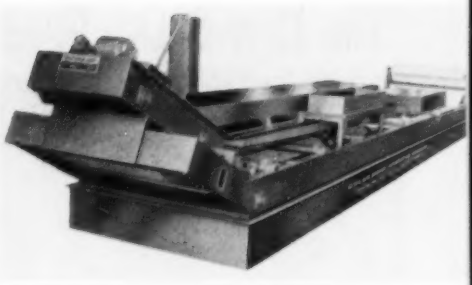
For more data circle **235** on Reader Service Card

Solution Filter

A Delpark 200 gallon Magnetic Separator and Filter for filtration processes requiring large flow capacities, has been announced by the Industrial Filtration Co., 166 Industrial Ave., Lebanon, Ind.

The largest of its kind manufactured, this unit removes sludge and abrasives by the use of a flat magnetic field of permanent magnets. The liquid flows over this magnetic field diffusing liquid and particles, thus assuring complete exposure to the magnets.

For maximum efficiency, the magnetic separator is combined with the Delpark paper filter. Particles remaining in the liquid after contact with the magnetic field pass down to the filter material which rests on a flat endless conveyor. The liquid filters through this material by gravity and the particles remain on the surface forming an efficient filter bed. Constant sludge removal is effected by the use of automatic chain-driven, rubber-bladed flights which carry the sludge up a ramp and deposit it into a tote box.



A 200-gallon Magnetic Separator and Filter

For more data circle 20 on Reader Service Card

★ ★ ★

Universal Rack for Barrel Tumbling

Rack tumbling in any standard barrel is possible with the "Lorco" universal tumbling fixture, which fits most sizes of horizontal barrels. The rack, a product of Lord Chemical Corp., Dept. PF, 2068 S. Queen St., York, Pa., is built for assembly within the compartment. The outside framework is adjustable to ensure a tight fit inside the barrel. The inner portion is a revolving "ferris wheel" with several work stations. Each station will accommodate one large part or several smaller parts. Rods or chains to hold parts are provided with rubber hose to prevent damage to the work parts.

To load, the rack is rotated in the drum until one of the work stations is opposite the door opening. Parts are hung from the chains or spring-loaded rods, and the rack is revolved to the next station. When the rack has been fully loaded, its ferris wheel part is clamped to the outside framework. The special clamp furnished with the rack prevents movement while the tumbling

Engineered for Extra Years of Trouble-Free Operation

WALKER
Selenium Rectifiers

You can't beat Walker Selenium Rectifiers for dependable D.C. regardless of the size of your plating installation.

These outstanding rectifiers are especially designed to give year in, year out service . . . minimum maintenance . . . no moving parts . . . nothing to wear out . . . nothing to get out of adjustment.

You get more for your money when you use Walker Selenium Rectifiers. Get the complete story, today. Write

Walker
THE WALKER DIVISION
NORMA-HOFFMANN BEARINGS CORPORATION
STAMFORD, CONNECTICUT

For more data circle 236 on Reader Service Card

to keep baths clean

most electroplaters choose

RED LABEL DARCO®*

For these very good reasons:

Only Darco activated carbon wets so quickly . . . ends carbon dust problems.

Only Darco gives such long filter cycles, needs so little labor and time for dumping filters.

Only Darco is developed and made especially for the plating trade . . . by specialists who know the plater's problems through many years of close association.

Only Darco is available everywhere for prompt delivery through a nationwide network of distributors. Call the source nearest you** . . . and be sure always to ask for DARCO by name!

*Made exclusively for the Plating Industry.

**We'll be glad to forward the names of the distributors nearest to you.

DARCO IS MADE BY

Chemicals Division
ATLAS POWDER COMPANY
Wilmington 99, Delaware
Atlas Powder Co., Canada, Ltd., Brantford, Ontario, Canada

For more data circle 237 on Reader Service Card

Lord Universal Rack for Barrel Tumbling

barrel is in motion. After tumbling, the clamp is loosened to allow the parts to be unloaded by revolving the successive work stations to the door opening. Rack is furnished with rods or chains, as required, and with special clamp.

For more data circle **21** on Reader Service Card

★ ★ ★

Washing Machine

Magnus Chemical Company, Inc., has announced a specialized batch type mechanically agitated Aja-Lif Cleaning Machine—the "Roll-O-Matic Metal Laundry," a cleaning machine that automatically washes, rinses, rust-protects and dries small metal parts such as acorn nuts, screw machine parts and fittings.

It removes oils and other industrial soils as well as loose chips.

Parts to be treated are loaded in a revolving drum, attached to an air cylinder. The drum is lowered into the "Roll-O-Matic Metal Laundry" tank.

The parts are rotated in the wash solution for a predetermined period,

Greater Economy • More Buff Efficiency • Longer Service

—and that's the STORY of the

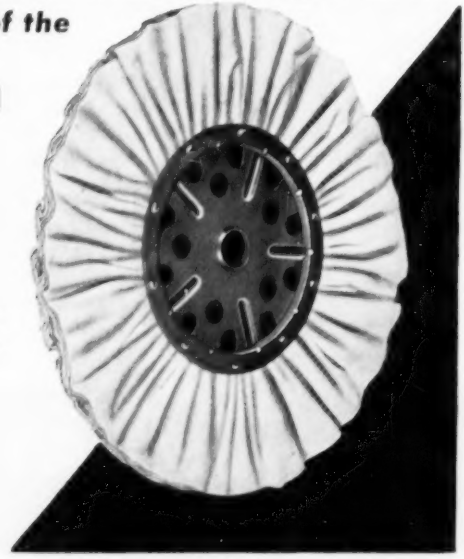
Riegel Ventilated

BIAS BUFF

in a Nutshell!

It's the ideal buff for automatic machines. Extra vents in the permanent or removable metal center permits a constant flow of air which prevents burning and lengthens life of buff.
Try this buff on your automatic machine.

The BIAS BUFF & WHEEL Company
Division of RIEGEL TEXTILE CORP.
3464-3466 Hudson Blvd.
Jersey City 7, N. J.

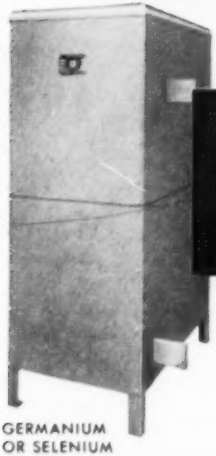


For more data circle **238** on Reader Service Card

Reconsider the source of your D-C power

DOES IT *AUTOMATICALLY* MAINTAIN CONSTANT VOLTAGE TO YOUR TANK?

THER REACTRON DOES!



GERMANIUM OR SELENIUM TYPES

OPERATOR'S PANEL

DOES IT ALSO GIVE YOU:

- Stepless Voltage Variation
- Single-knob *fingertip* control
- Small, remote operator's panel
- Static saturable reactor
- Advanced magnetic amplifier design
- Fast response and wide control range

THER REACTRON DOES!

AND AT LOWER OVERALL COST

Reduced Maintenance Cost:

THER REACTRON eliminates tap switches, vacuum tubes, motor driven brushes, arcing contacts, gears and other moving parts.

Write for technical study of REACTRON vs. TAP SWITCH or MOTOR DRIVEN VARIABLE AUTO-TRANSFORMER installations.

Reduced Installation Cost:

THER REACTRON integrates control and rectifier in same cubicle — requires no heavy cable between rectifier cubicle and operator's panel—features compact "portable radio size" operator's panel that's readily mounted almost anywhere without requiring floor space.

It's THER . . . Whatever your D-C Requirement

THER ELECTRIC & MACHINE WORKS

ESTABLISHED 1915

13A SOUTH JEFFERSON ST. • CHICAGO 6, ILLINOIS

For more data circle 239 on Reader Service Card

Magnus Pretreatment Machine for Small Parts

followed by a spray rinse then a rotating anti-rust treatment and finally a hot air dry. Washing and anti-rusting solutions are salvaged for reuse.

After completion of the final liquid or dry stage the drum is automatically raised.

The unloading chute, attached to the drum, then lowers. The operator opens the door on the drum and the parts are dumped on the chute and slide into a container.

For complete information write Dept. PF, Magnus Chemical Co., Inc., Equipment Div., Garwood, N. J.

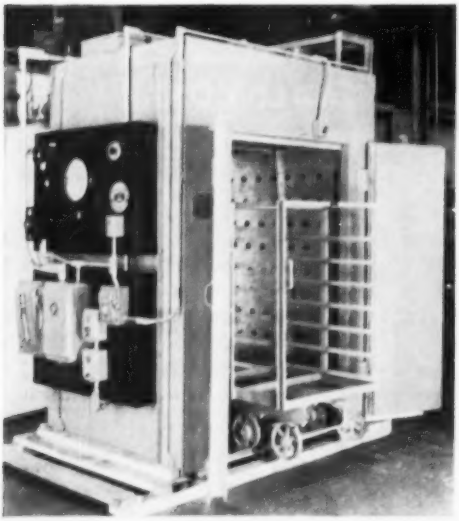
For more data circle 22 on Reader Service Card

★ ★ ★

Coated Abrasive Paper

No-Load Finishing Paper recently introduced by the Coated Abrasives Division, Armour and Company, Alliance, Ohio, is now available in a wider range of grits and weights.

Crystolon No-Load Finishing Paper for metal finishing is available in grits 80, 100, 120, 150, 180, 220, 240, 280,



OVENS

for More Uniform—
Faster Drying

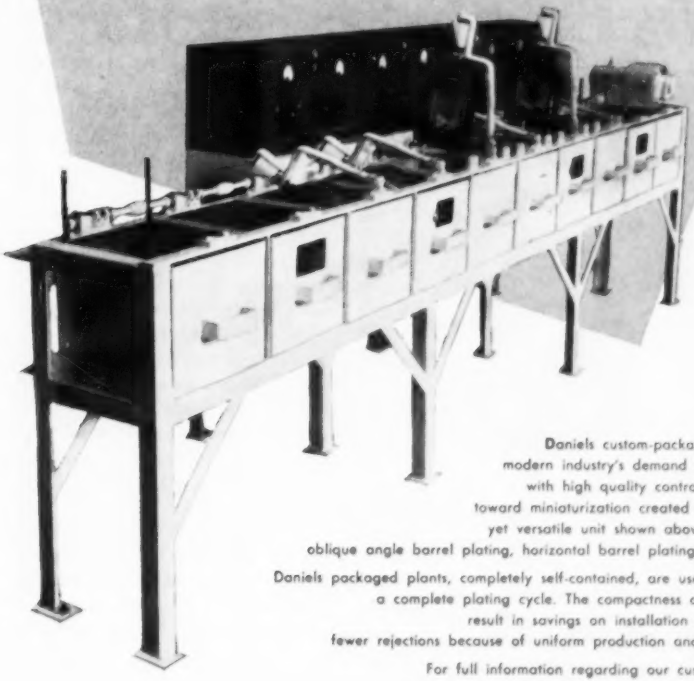
- Recirculation Heating
- Electric • Gas • Oil • Steam
- Batch or Conveyor Types
- Safety Control Features
- Save Space and Time
- Reduce Operating Cost

Write for Catalogs

W. S. Rockwell Company • 2906 Eliot St., Fairfield, Conn.

For more data circle 240 on Reader Service Card

COMPLETE PLATING PLANTS DESIGNED TO MEET SPECIFIC PRODUCTION NEEDS...



Daniels custom-packaged plating plants fill modern industry's demand for production plating with high quality control. The industrial trend toward miniaturization created the highly specialized yet versatile unit shown above. It can be used for oblique angle barrel plating, horizontal barrel plating, or still tank plating.

Daniels packaged plants, completely self-contained, are usually designed around a complete plating cycle. The compactness of these plating plants result in savings on installation cost, floor space, and fewer rejections because of uniform production and high quality control.

For full information regarding our custom-packaged plating machines, together with any other Daniels products, just fill out the coupon below and attach it to your letterhead.

DANIELS PLATING BARREL & SUPPLY CO.

129 Oliver Street
Newark 5, New Jersey
MArket 3-7450

MAIL COUPON TODAY!

Daniels Plating Barrels & Supply Co.
129 Oliver Street, Newark 5, New Jersey

Name_____ Title _____

Firm_____

Address _____ State _____

For more data circle **241** on Reader Service Card

320, 360, 400, and 500 in "A" weight and 150 in "C" weight.

No-Load Finishing Paper has a "non-filling" surface coating which won't come off when moistened or during sanding operations. Added sharpness is built in by means of an improved method of grain coating.

"No-Load" paper has a binder adhesive specially formulated for the No-Peel grain layer. This prevents "grain shedding" when sanding sharp or rough edges.

For more data circle 23 on Reader Service Card

★ ★ ★

Compact Cleaning Machine

Developed for cleaning small parts, an automatic machine recently announced by Ransohoff, Inc., Hamilton, Ohio, is adaptable for washing, rinsing and drying. This machine can be used either as a single unit or in a group of 2, 3 or 4 installed in one location.

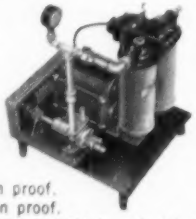
Savings in space are effected by the machine. It occupies only 10 square feet and can process up to 40 baskets of parts per hour.

The completely automatic "Ransomatic" Small Parts Washer cleans two baskets or other loads of parts in one load. Maximum overall size of each basket is 21½ inches long, 14¾ inches wide and 14 inches high.

The baskets are loaded into the cabinet and the door is closed. This starts an automatic, adjustable time cleaning cycle in the following sequence: hot recirculated cleaning solution spray for 30 seconds; hot water rinse spray for 60 seconds and a drain-dry for 90 seconds.

Such automatically timed periods have been found effective by users. However, the machine is designed so that wash, rinse and drain-dry periods

NEW Sethco FILTER PUMP
double cartridge self-priming
1-3 Gal./Min.



Model **CCGIE-120**—rated 1-3 gals. per min. for continuous filtration of solvents, lacquers, paints and all types of Product Finishing solutions.
FILTER ASSEMBLY: Double cartridge equipped with pressure gauge.
PUMP: Self-priming gear with relief valve set at 35 p.s.i.
MOTOR: ¼ H.P., explosion proof.
SWITCH: Manual, explosion proof.
PANEL: Bakelite, 14" x 16" x ½" thick; swivel ball bearing, rubber tire casters.
HOSE: two 10' lengths, solvent resistant, inlet strainer.
50' Electric Cable.
DIMENSIONS: 14" x 16" x 6" high, Wt. 65 lbs.

Sethco Mfg. Co.
70-72 Willoughby St., Bklyn. 1, N. Y. • ULster 5-8940

For more data circle 242 on Reader Service Card

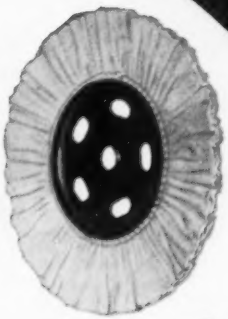
POCKET HANDI-GAGE
A MAGNETIC THICKNESS TESTER
for electrodeposited, hot-dipped and painted coatings on steel. No bigger than a fountain pen, but what a job it does! Tests plated, painted, enameled, or plastic laminated coatings in SECONDS—in the lab or on the production line. Accurate, quick and easy to use.
WRITE FOR FULL INFORMATION
59 EAST 4TH STREET — NEW YORK 3, N. Y.
Paul N. Gardner Laboratories Corporation

For more data circle 243 on Reader Service Card

FORMAX

the Perfect Combination

FROM START TO FINISH



ZIPPO CLOTH BUFFS

These famous long-wearing buffs run cool under all buffing conditions. High count bias-cut cloth is assembled on ventilated steel centers. Each section is perfectly balanced and faced—requires no raking.

BUFFING COMPOUNDS

Formax produces a complete line of buffing compounds in bar, tube and liquid form.

Our extensive manufacturing, laboratory and testing facilities are at your disposal.

ZIPPO SISAL BUFFS

You have a pleasant surprise coming if you haven't tried the new Zippo bias-type sisal buff. It was specifically developed for steel buffing—to blend polishing grit lines—to cut down stainless steel—and bring up a bright lustre.

Other Formax products include the well-known C-20 Flexible Contact Wheels and F-26 Abrasive Belt Grease Stick.

Descriptive Catalogs Sent on Request

FORMAX MFG. CORP.

DETROIT 7, MICHIGAN

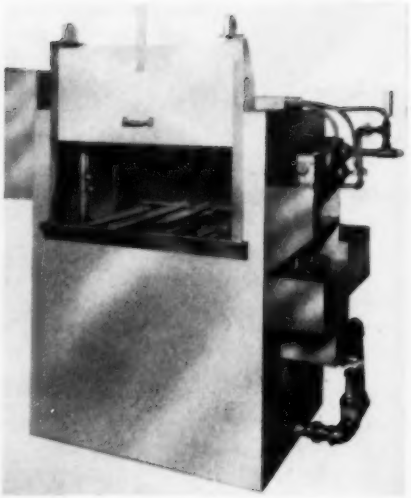
"THE FOUR McALEERS"

For more data circle **244** on Reader Service Card

are widely variable. In the rinse operation, the parts accumulate enough latent heat to air-dry themselves after the excess water drains off. A hot air drier can be added to the machine if required.

At the completion of the cleaning cycle, the door of the "Ransomatic" opens automatically and the baskets or racks of parts are unloaded by the operator. The door remains closed while the automatic washing and rinsing cycle is in progress assuring thorough cleaning and ensuring safety.

The solution tank forms the base for the cleaning cabinet and contains plate coils for heating of the wash solution and easy removal for tank cleaning. An instantaneous steam coil type heater is provided to heat the rinse water. Automatic controls maintain temperatures of the solution and rinse water. Heating of wash solution and rinse water is by gas, oil or electricity.



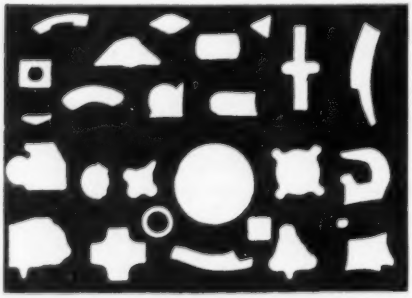
Compact "Ransomatic" Small Parts Washer

Further details may be obtained upon letterhead request to Ransohoff, Inc., 610 N. Fifth St., Hamilton, Ohio.

★ ★ ★

Air Washer

The development of an Arco rubber lined, acid-proof air washer has been announced by Automotive Rubber



Pre-Cut Masks Speed Finishing

Brady Pre-Cut Masks are self-sticking — go on fast and accurately. Protect from finishing to inspection. Hundreds of shapes and sizes in stock, for paint spraying, baking, tumbling, etc. Specials made to order. Fast delivery. Distributors in 150 cities.

Write for free samples and Bulletin 160-C.

W. H. Brady Co.

746 W. Glendale Ave., Milwaukee 12, Wis.

For more data circle 245 on Reader Service Card

REDI-STRIP COMPANY
PAINT STRIPPING SPECIALISTS
WE STRIP PAINT! . . . WE DO THE WORK!
• FAST SERVICE! • FAIREST IN PRICE!
• FIRST IN QUALITY!
LOrain 9-5316
TO 1-3376
10811 SO. GARFIELD AVE. SOUTH GATE, CALIF.

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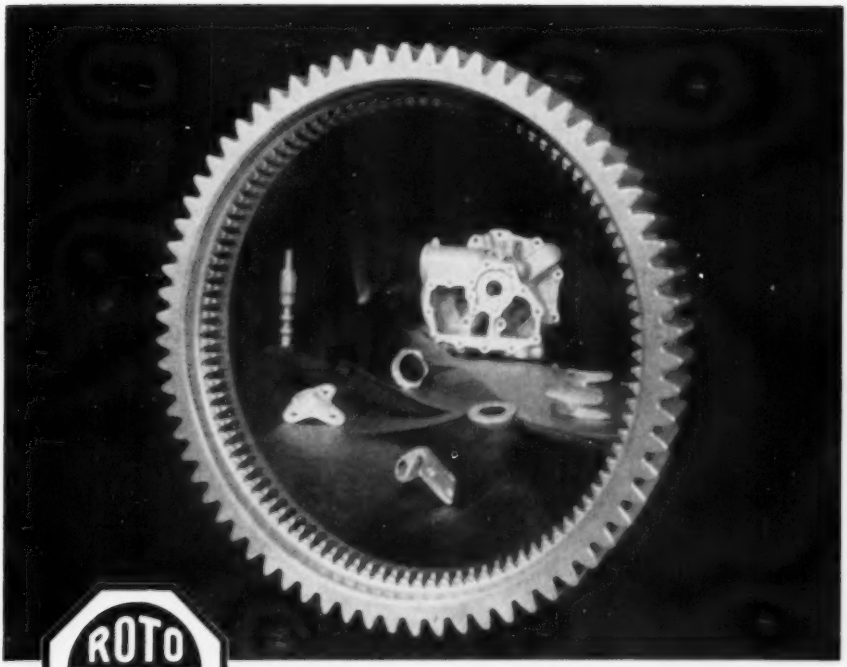

ROTO FINISH

it's the finish that counts!

Roto-Finish maintains exact tolerances on precision parts with no significant dimensional changes. It makes possible a wide range of finishes applicable to parts of almost any size or shape; finishes a variety of materials — at big savings in manpower and costs. Without obligation, send sample unfinished parts to us. Include finished part for guide and your specifications. Roto-Finish will finish parts in its laboratory. You get a complete process report. You are guaranteed results and a finish that counts!

WRITE FOR FACT-PACKED ROTO-FINISH CATALOG NOW

Roto-Finish ROTO FINISH **COMPANY**

3704 Milham Road, Kalamazoo, Michigan
Originators of the Roto-Finish Process

P. O. Box 988
Phone 3-5578

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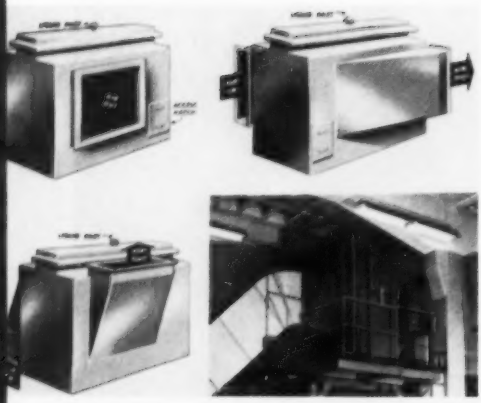


Several Arco Air Washers and typical installation (lower right) for removing corrosives

Company, Inc., 12564 Beech Rd., Detroit 39, Mich.

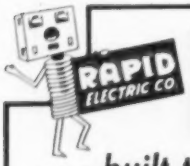
Designed for integration into plant ventilation systems, the unit is said to be capable of eliminating 90 to 99 per cent of toxic fumes and corrosives from exhaust gases.

The acid-proof washer is equipped optionally with straight-through air inlet and discharge; with bottom air inlet and top air discharge; with end inlet and end discharge and an added downstream access hatch. Several models are available in capacities from 7,200 to 57,600 c.f.m.

The liquid distribution system in Arco acid-proof air washers is a gravity feed, overflow type, designed to prevent clogging and eliminate back pressure on water lines.

The liquid-air contact medium used in the Arco cross flow units is known as saddle type tower packing. This type of packing is said to bring the scrubbing liquid and the air, fumes, or other gas into intimate contact within the washer unit.

The essential operating principle of the Arco acid proof washers is center-



SELENIUM RECTIFIERS

. . . built to your Specifications

INDUSTRIAL AND LABORATORY USE.

- ELECTROPLATING
- ANODIZING
- PERIODIC REVERSERS
- CONTROLS

CATALOG AVAILABLE ON REQUEST

RAPID ELECTRIC CO.
2877 MIDDLETOWN ROAD, N. Y. 61, N. Y.

For more data circle 248 on Reader Service Card

the original McAleer
ESTABLISHED 1923

A complete line of
Polishing and Buffing Compounds in Bar, Tube, extruded or liquid form.

FREE SAMPLES & PRICES SUPPLIED

Territories available
Jobbers and Distributors

McAleer MANUFACTURING CORP.
101 S. WATERMAN DETROIT 17, MICH

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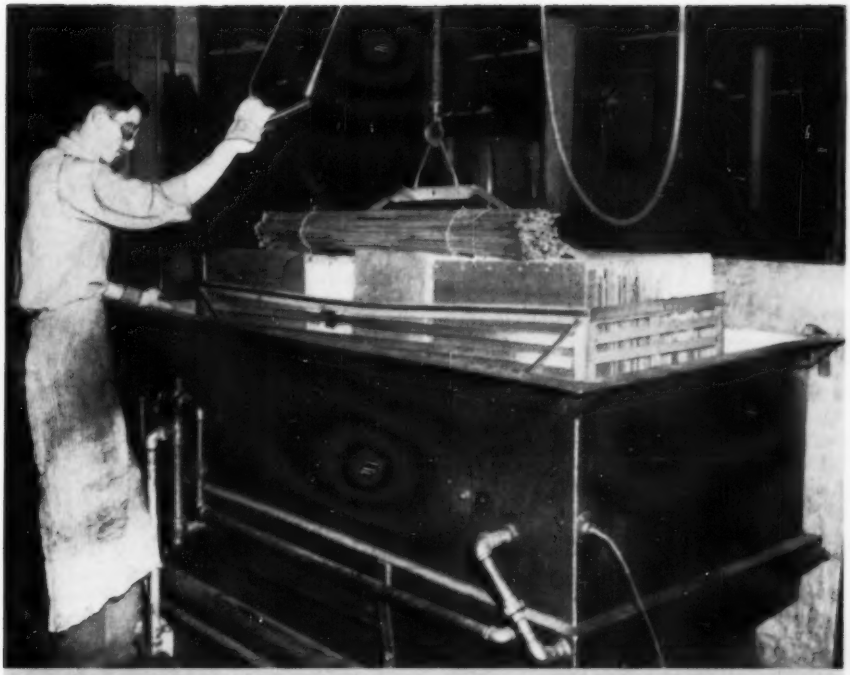


Want more cleaning at lower cost?

Use Nialk® TRICHLORethylene

Send for free illustrated booklet, NIALK TRICHLORethylene; contains valuable data on the use and handling of this chemical.

The high solvent power of NIALK TRICHLORethylene makes it one of the most efficient metal degreasing agents available today. This plus its recoverability for re-use proves it more economical for your cleaning and degreasing processes. Characterized by uniform quality and high chemical stability, this nonflammable solvent may be used in vapor degreasing or as a direct dip rinse.

Choose NIALK TRICHLORethylene for greater cleaning power per gallon.

From the Salt of the Earth

HOOKER CHEMICALS & PLASTICS

HOOKER ELECTROCHEMICAL COMPANY

4717 Buffalo Avenue, Niagara Falls, N. Y.

Niagara Falls • Tacoma • Montague, Mich. • New York • Chicago • Los Angeles

For more data circle 253 on Reader Service Card

ed in a vertical packing bed which is irrigated from the top with a liquid, usually, though not necessarily, water. Liquid is distributed throughout the bed from calibrated drip points producing uniform wetting. This presents a blanket of wet surface area to the passing air or other gas.

Arco also makes available the counter-flow packed column unit. This unit is engineered to handle service conditions requiring the additional efficiencies and operational advantages inherent in counter flow systems for cooling, drying, absorption, scrubbing, and other requirements.

Arco acid-proof air washers are suitable for combating corrosive fumes in plating, pickling, and metal finishing operations.

For more data circle 25 on Reader Service Card

FOR SAFE, CERTAIN SCALE AND RUST REMOVAL... USE PROMAT ACID ADDITIVE

Promat acid additive is actually an accelerator —not an inhibitor. It assures complete and uniform removal of hot rolled or heat treat scale—rust—or oxide film.

TRY a one-gallon can of #7073 in your shop —DISCOVER the time-saving, money-making advantages now!

Price $5.00 PP

SEND TODAY FOR TECHNICAL BULLETINS!

Swift INDUSTRIAL CHEMICAL CO. Canton Connecticut

For more data circle 251 on Reader Service Card

Pressure Tank

A three-gallon pressure fluid tank that meets A.S.M.E. specifications has been introduced by the Paasche Airbrush Company, 1910 Diversey Pkwy., Chicago 14, Ill. The tank is of galvanized steel construction throughout and has a guaranteed maximum working pressure of 110 lbs.

Pressure Fluid Tank

The shell is made of one piece, drawn steel with rolled top and rigid steel supporting skirt. Straight sides allow for easy cleaning and maximum capacity refill. The cover is of galvanized, pressed steel and has a self-contained gasket that is easy to remove.

The tanks are available in five, 10, and 20 gallon sizes.

For more data circle 26 on Reader Service Card

★ ★ ★

Barrel Plater

Lasalco, Inc., 2820 LaSalle St., St. Louis, Mo., has announced a clear plastic utility barrel plater designed for plating small lots. Designated as Model 9X15, it can be hung on the cathode rod in any plating tank and plugged into nearest electric outlet.

The hexagon-shaped, high temperature Plexiglas 9 by 15-inch cylinder resists plating solutions and temperatures up to 180 deg. F. Internal breaker strips provide interchange of work for more uniform plating. The cylinder has a removable door with plastic-coated, spring-type latches.

A 3-gear Plexiglas drive eliminates plate-up on drive mechanism. The bar-

rel rotates as it is lifted from the solution, reducing dragout loss.

For more data circle 27 on Reader Service Card

★ ★ ★

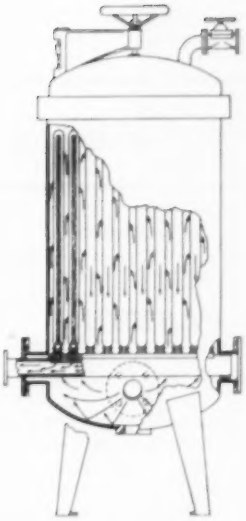
Solution Filter

A solution filter recently announced by Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Ill., incorporates a bottom outlet and lift-out leaves.

This design feature is said to offer advantages in recovery of materials and reduction of filter "heel."

Leaf lock-up is virtually eliminated with Industrial's "lift-out" system for attaching leaves to the outlet manifold. A nozzle with a rubber O-ring drops into a round hole with properly positioned lands. The leaves are correctly positioned at the top by hard rubber spacers which rotate in or out of the closing position.

For more data circle 28 on Reader Service Card



Filter with Bottom Outlet, and Lift-Out Leaves

For Dust Free Finishes!
BOND TACK CLOTH

IN ROLLS

Cut off any size piece to use as needed.

IN BULK

Cut and folded. Ready to use.

STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME

Now Available in Rolls or Cut Bulk—White or Gold

In Three Different Types of Cloth

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up!

The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free* and *Wax-Free*. Gives a sparkling speck-free Finish *every time*. Clean and sanitary. No waste.

TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.

BOND CHEMICAL PRODUCTS CO.

"The Tacky Wiper Specialists"

2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES —144 to the Carton

A WARRANTY OF SATISFACTION IN EVERY CARTON

For more data circle 252 on Reader Service Card

News of the Industry

New plants . . . company news . . . new positions . . . meetings . . . honors . . . societies.

NEW PLANTS

Brookfield Engineering Laboratories, Inc., Stoughton, Massachusetts, manufacturer of Brookfield Viscometers and other viscosity measuring instruments has announced plans for major expansion of plant facilities. The expansion will increase manufacturing space 50 per cent. The new addition will be ready in July.

★ ★ ★

Gordon Bartels Co., Rockford, Ill., recently completed construction of a chemical coatings factory with 12,000 square feet floor space. The factory is unique because it is constructed on the side of a hill which eliminates use of elevators and yet allows upper level loading of paint mills and mixing tanks. All production is handled by natural gravity feed.

Safety precautions featured in the new building include: explosion-proof windows which automatically fly open under pressure; a new type explosion-proof roof of gypsum planking, containing special clips which force the roof open during an explosion without damaging the side walls. Electrical apparatus is grounded throughout, eliminating any static electricity. Production began recently, concentrating on industrial finishes for flow coating, spray coating, and roller coating.

Gordon Bartels, president, has been associated with the chemical industry for many years. Until August 1955, he was president of Rockford Varnish Co. Carlton Howard, associated with Rockford for 23 years, is vice president and general manager of Bartels.

★ ★ ★

In honor of the 100th year anniversary celebration, **Dixon & Rippel, Inc.,** Kingston, New York, has announced the opening of a new plant in Saugerties, New York on July 1, 1956.

The new factory will double the present manufacturing space and facilitate increased production. The company manufactures fine wire scratch brushes for silversmiths and platers.

★ ★ ★

The office of the Detroit Technical Section of the **International Nickel Company Development and Research Division** has been moved to 19842 James Couzens Highway, Detroit 35, Michigan, according to an announcement by Donald J. Reese, assistant manager of the division.

Gordon Bartels Moves to New Factory in Rockford, Illinois

The American Chemical Paint Company, Ambler, Pa., has announced the acquisition of office and plant facilities at St. Joseph, Missouri.

The new office and plant will serve the area between the Mississippi River and the Rockies, and from Canada to the Gulf of Mexico. Present plans include the production of metalworking and agricultural chemicals.

Heading the St. Joseph branch will be J. H. Abrams, formerly a supervisor in the Pittsburgh territory.

★ ★ ★

The General Ultrasonics Company, Hartford, Conn., manufacturer of ultrasonic processing equipment, has moved to a new plant at 67 Mulberry St., Hartford, Conn. The air-conditioned plant provides additional production, test and research facilities.

Products presently manufactured include ultrasonic generators of both electronic and motor-alternator types in various frequencies and in power ranges from laboratory to large-scale production sizes.

R. B. Goodsell, vice president of Racine Plating Company, Racine, Wisc., has formed a new corporation to engage in high vacuum metalizing. The new corporation, **Vacuum-It, Inc.,** will be located at 622 Stannard St., Racine, Wisconsin. Vacuum-It will metalize parts either with first or second surface coatings.

R. B. Goodsell

★ ★ ★

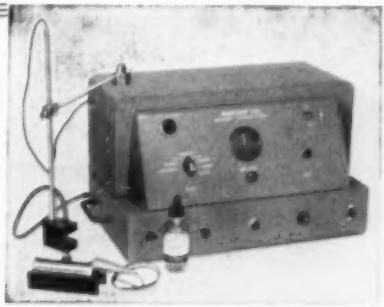
The **Puritan Manufacturing Company** has been re-established in new quarters located at 100 Watertown Ave., Waterbury, Conn. Facilties of the company were completely destroyed by last year's flood. The organization is again ready to supply buffing compounds and cleaners.

Be sure of your

PLATING

THICKNESS

with the



KOCOUR Electronic Thickness Tester

There's no room for guessing plating thickness when you can have accurate readings quickly. The Kocour Electronic Thickness Tester determines the thickness of chromium, silver, tin, cadmium, zinc, brass, copper, nickel, lead, and other plating. Readings are direct . . . accuracy 90-95%. Write for further information . . . no cost, no obligation.

FREE! Get your reprint of "THICKNESS of ELECTRODEPOSITED COATINGS BY THE ANODIC SOLUTION METHOD" by C. F. Waite.

KOCOUR CO.

4814 S. St. Louis Ave.

CHICAGO 32, ILLINOIS

For more data circle 253 on Reader Service Card

COMPANIES

Industrial Materials Company, San Francisco distributor of abrasive, chemical, sanding and grinding equipment, has been appointed by **Speed-D-Burr Corporation,** Glendale, California, manufacturer of precision barrel finishing equipment, as distributor for the Bay Area, central and northern California.

Speed-D-Burr equipment is available for inspection and operation in the processing department for test and experimental work, pilot runs, customer process development and job shop barrel finishing. It has been installed by Industrial Materials Co. to give local engineering and customer service for all barrel finishing equipment, media, compounds and supplies. This barrel finishing department in the Bay Area will be operated as a subsidiary company known as the **Micro-matic Deburring Co.,** 1447 34th St., Oakland, Calif.

H. J. Miller, Speed-D-Burr, points out barrel finishing unit to H. J. Lackey, Jr., Industrial Materials Co., new Speed-D-Burr distributor.

The Marlane Development Company Inc., New York, N. Y., has announced that a demonstration of the Dalic Process of selective localized plating for engineering purposes will be held in Washington, D. C., during the week of the A.E.S. Convention, June 17-21.

The demonstration can be witnessed in the Virginia Room of the Mayflower Hotel and will include localized crack-free chromium plating, tin plating at better than a mil a minute, and nickel plating on aluminum with perfect bonding, as well as other types of plating. Engineers are invited to bring samples for Dalic plating.

★ ★ ★

Seventeen technical service representatives of **Oakite Products, Inc.,** met in New York City in March for a five-day Anniversary Conference. The program was the first of three planned for 1956 to enable field men to pool their experience and work with laboratory chemists to become familiar with new products being made available to industry.

Subjects discussed were: new developments in barrel finishing and treatment of aluminum; new advances in food sanitation; new materials in

Protect spray booths with
BOOTHCOTE
the finest product made!
SAFER
Non-Inflammable, Non-Toxic
DRY-OR-WET
Boothcote No. 4 for dry wall booths (just peel off overspray)
Boothcote No. 5 for water wash walls
SAVES
TIME, LABOR, MONEY!
(Apply — Spray or Brush)
In 55 gal. drums . . . 80¢ gal.
In 15 gal. drums . . . $1.00 gal.
In 5 gal. pails . . . $1.25 gal.
F.O.B. Buffalo, N. Y.
Inquiries Invited — Samples on Request
HYGRADE
Food Products Corp., Industrial Division
18 Stetson St., Buffalo 6, N. Y.
For more data circle **254** on Reader Service Card

the paper, rubber, glass, chemical, petroleum, and railroad industries; applications of the growing line of Oakite CrysCoat phosphating materials; and new water treatment methods.

Similar conferences are planned for June and September so that periodically each field representative will participate in intensive refresher training.

★ ★ ★

The Carborundum Company will increase capacity for production of zirconium, a metal used in atomic reactors, to over 1½ million pounds per year with the construction of a new plant in Parkersburg, West Virginia.

★ ★ ★

A retirement party for **C. W. Fiske**, Oakland district manager of **W. P. Fuller & Co.**, San Francisco, Calif., was held April 27, at the Oakland Willows. Mr. Fiske, who has been with Fuller for more than 44 years, pioneered branch offices in southern California and Arizona for the company.

Edith L. Kellman places a lei from J. M. Fuller, branch manager, Honolulu, on retiring C. W. Fiske. W. P. Fuller III, vice president, looks on.

Another **fine** product made **finer** . . .

with the PARAMOUNT "Finishing Touch"

"We find Paramount Felt Wheels best for our ticklish finishing problems," says J. Gaspari and Co., Inc., renowned makers of eyeglass frames. "The samples (illustrated) are a good example. Thanks to the controlled finishing your wheels allow, we are able to remove high solder spots on the frame and temple which must be lapped smooth without damaging the gold shell. We also use your wheels to finish the aluminum plaques because they cut and smooth in *one operation*."

From heavy castings to delicate jewelry, whatever *your* product, Paramount Felt Wheels can save you time and money. Call your supply house today.

Paramount
Felt Wheels,
Bobs, Sheet Felt

Bacon Felt Co. 447 West Water St., Taunton, Mass.

For more data circle 255 on Reader Service Card

It has been announced that **Ohio Hydro Deburring Company**, 10926 Avon Ave., Cleveland 5, Ohio, will be the first Ohio distributor for **Ultra-Sheen Metal Finishes, Div. of B. W. McIntyre Co.**, Reseda, Calif., throughout the northeastern part of Ohio.

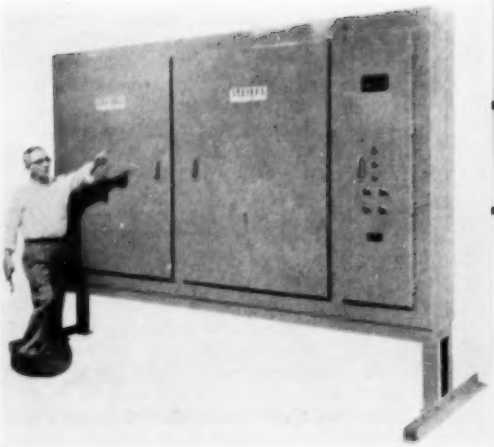
Bernard A. Farmer will be available for technical advice and sales information at Ohio Hydro.

★ ★ ★

One of the world's largest control panels for use in the metal finishing industry was recently installed by **Frederic B. Stevens, Inc.**, Detroit, Michigan. The unit is designed for automatic control of solution temperatures in the anodizing of automobile grilles.

Conditions requiring temperatures ranging up to 300 deg. F., can be achieved automatically with the controls provided.

The unit connects a battery of electric heaters with a capacity in excess of 350,000 watts. In addition, the controls permit the automatic opening and closing of motor driven valves for supplementary steam heating and water cooling. Use of the latter facilities permit a constant range of temperature varying only 10 deg. F. between 240 and 250 deg. F.



One of the largest control panels for use in metal finishing in the world. The unit, installed by Frederic B. Stevens, Inc., is designed for control of anodizing solution temperatures.

The panel was built to handle up to 1,200 amperes a.c. current. Normal working requirements are 1,000 amp.

★ ★ ★

Pennsylvania Lacquer Center, Philadelphia, Pa., recently celebrated its twentieth anniversary. The founder, **Harry Griver**, started the business in 1936.

The company has grown rapidly and now has a plant containing mixing and blending facilities as well as a research center in Haddonfield, N. J., a branch store in Camden, N. J., and main offices and a warehouse at 145-147 N. Fourth St., Philadelphia, Pa.

The company manufactures lacquers and synthetic enamels. It also handles a complete line of thinners. Joseph Bongiorno is superintendent of

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

For more data circle 256 on Reader Service Card

the plant. Chief chemist is Joseph Di Mauro. Dan Kane is sales manager of the company.

James M. Ross

Harry Griver

It has been announced that **F. H. Ross & Company,** exclusive agent in the southeast for **G. S. Blakeslee & Co.,** Chicago, Ill., has formed a new Metal Finishing Department, which will service metal fabricators and finishers in southeastern United States. This new operation includes engineering as well as a sales department.

James M. Ross will be sales manager for this division of the Ross Co.

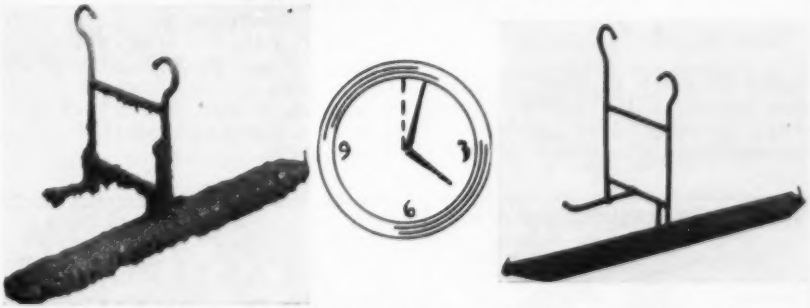
NEW POSITIONS

Clifford G. Carter has been appointed regional engineer for the southern Connecticut area by the **Esbec Barrel Finishing Corp.,** Byram, Conn.

★ ★ ★

L. Shere, president of **The Diversey Corporation,** Chicago, manufacturer of cleaners and other chemicals used in metal finishing, has announced the promotion of **Dr. Neil W. Berst** to director of Research Laboratories. In his new position, Dr. Berst will coordinate and guide new product development, improvement of current products and evaluations of competitive products.

3 lbs., 11 ozs., of Paint Build-Up
Stripped in 2 Minutes



The KOLENE Paint Stripping Process performs a complete and rapid stripping job . . . chemically. Kolene has not only developed this process but also engineers and builds the equipment. *Write for complete information.*

KOLENE CORP., 12894 WESTWOOD AVE., DETROIT 23, MICH.

For more data circle 257 on Reader Service Card

A. O. Thalacker, president of the **Detrex Corporation,** Detroit, Mich., has announced the appointment of **John P. Emmett** to the Detrex Board of Directors.

Mr. Emmett has been assigned as special assistant to the president.

Robert P. Gygli, Jr.

John P. Emmett

Calvin E. A. Solla, Ohio district manager of **Hanson-Van Winkle-Munning Co.,** Matawan, N. J., has announced expansion of H-VW-M coverage and service in Cleveland and central Ohio by the addition of **Robert P. Gygli, Jr.,** to the Cleveland sales staff.

★ ★ ★

Allied Research Products, Incorporated, Baltimore, Md., has announced the appointment of **Jack Gabrielson** as representative in northern Chicago. Mr. Gabrielson will serve the north side of Chicago and the northern Illinois counties, including Rockford.

Frank Bryant has also moved to the Chicago area, and will cover the south side of Chicago as well as southern Illinois and Indiana.

Arthur Jackson of Davenport, Iowa, has been appointed to take over the Iowa-Nebraska-Western Illinois territory, formerly handled by Mr. Bryant.

★ ★ ★

Joseph J. Duffy, Jr., has been appointed manager of Executive Procurement and Development of the **Pennsylvania Salt Manufacturing Company,** Philadelphia, Pa. In this newly created position, Mr. Duffy will be responsible for the procurement of technical and professional personnel and the coordination of a company-wide executive development program.

John M. Davidson has been named manager of **Pennsylvania Salt Manufacturing Company,** Metal Processing Department. He succeeds Joseph J. Duffy who has been placed in charge of the company's Executive Development Program.

Mr. Davidson will be responsible for the national distribution of Pennsalt's line of phosphatizing, lubricating and cleaning chemicals.

John C. Lum has been named manager of New Products, and **Philip Rech,** manager of Fosproducts for **Pennsylvania Salt Manufacturing Company,** Metal Processing Chemicals Department.

Portable Sandblast Gun

—Complete— simply connect to air line

Rugged • Efficient • Guaranteed $27.50

A Real Performer Handy in any shop

LINDBERG PRODUCTS CO.

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CHEM PLASTISOLS AND PRIMER SYSTEM

For Rack Coatings—Tank Linings

Gives Ultimate in Adhesion.

Prevents breakaway at critical contact point.

Write for Booklet

CHEM PRODUCTS INC.

ROCKY HILL 10 CONN.

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Dr. George McCoy has been named manager of the **Pennsylvania Salt Manufacturing Company's** Research & Development Department, a major component of Pennsalt's recently created Technical Division. Other units of this division which is directed by vice president W. A. LaLande, are the Central Engineering, Patent, Commercial Development, and Sales Services Departments.

Allan H. Lee has become a member of the technical sales staff of **Pennsalt Chemicals of Canada,** William B. Billingsley, manager, has announced.

Mr. Lee's office will be in Pennsalt's headquarters in the Harbour Administration Bldg., Hamilton, Ontario.

HONORS

Dr. R. B. Saltonstall

Dr. R. B. Saltonstall, technical director of the **Udylite Corporation,** Detroit, rerently received a wrist watch at a celebration honoring his completion of 20 years with Udylite. Dr. Saltonstall is a past president of the Detroit Branch, American Electroplaters' Society, and secretary of Committee B-8, American Society for Testing Materials.

SOCIETIES

Maurice Van Loo

Maurice Van Loo, director of paint research of The Sherwin-Williams Co., Cleveland, has been selected to present the annual Joseph J. Mattiello Memorial Lecture at the 34th Annual Meeting of the **Federation of Paint and Varnish Production Clubs,** which will be held October 22, 23, and 24 at the Netherland Plaza Hotel, Cincinnati.

The subject of Mr. Van Loo's paper has not as yet been disclosed.

The Mattiello Lecture commemorates the name of Joseph J. Mattiello, who, as a member of the Federation, did much to expand the protective coatings field.

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VERTICAL DRUM TRUCK
ROCK-A-DRUM

Picks up 55 gal. drums, rolls them over for side draining. Becomes a rugged stand on 3" wheels.

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FUNCTIONAL FINISHES!!

If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity —

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We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.

The Varnish Products Co.

5204 Harvard Avenue
Cleveland, Ohio

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Fig. 1—A feature of the Milwaukee Branch Annual Meeting was the cocktail party and lunch following the Educational Session. This is a view of some of the more than 100 members and guests who attended. More than 400 persons attended banquet in the evening.

★ ★ ★

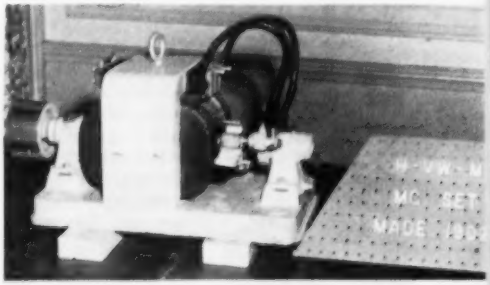

Fig. 2—On exhibit at the Milwaukee Branch Annual Meeting was this 4 volt, 150 ampere Hanson-Van Winkle-Munning generator built in 1902. This machine was used by "Woerner the Silverplater" in Milwaukee in the early 1900's. It was recently restored by Henry Bornitzke of Cutler-Hammer, Inc.

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Fig. 3—Several of the speakers and officers of the Milwaukee Branch may be seen in this view of the luncheon. Clyde Kelly, president of the A.E.S. (center background), may be seen in conversation with Herman Tessman, president of the Milwaukee Branch. After the luncheon Clyde Kelly talked briefly on the A.E.S. (Photos by PRODUCTS FINISHING.)

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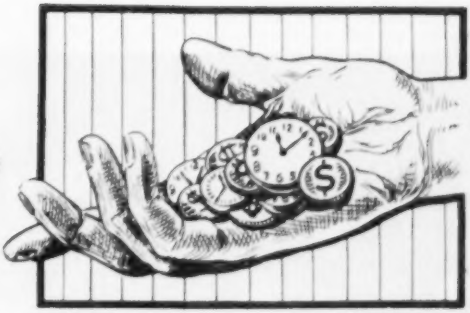

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Copper Alloys	ELECTRO-GLO #200
Austenitic Stainless Steel	ELECTRO-GLO #300
Martensitic Stainless Steel	ELECTRO-GLO #400
Carbon Steel	FERRO-GLO #500

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Less pressure required **. . . Paint and air are blended so that force alone is not relied upon to break up the paint.**

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Representatives of the N.A.M.F., the American Electroplaters' Society and the trade press at the Masters' Electro-Plating Association banquet included (left to right): A. Doria, editor of "Plating;" Mrs. Doria; John Palik, Jr., president of N. A. M. F.; Mrs. Palik; John E. Trumbour, equipment and news editor, "Metal Finishing;" Mrs. Trumbour; Ezra A. Blount, editor, "Products Finishing;" Dr. Samuel Heiman, first vice president, A. E. S.

The 38th Annual Banquet of the **Masters' Electro-Plating Association, Inc.**, was held on Saturday, May 12, at the Waldorf-Astoria Hotel, New York City. This party, attended by representatives of the job plating industry and suppliers in the metropolitan New York area, has become an outstanding annual social event.

BARREL NICKEL BRIGHTENER

cuts brightening costs — concentrated to quadruple strength—shipping weight is cut 275%. You don't ship, store or handle water! No deposits, no carboy returns. A capful is enough for a barrel of nickel.

Platers Research CORPORATION

Nickelite boosts corrosion resistance of barrel nickel 30 to 100% by actual salt spray test.

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The party this year was attended by over 350 persons including guests from a number of other cities. Officials of the M.E.P.A. primarily responsible for the success of the annual banquet are: Sal. Novelli, chairman; S. C. Taormina, executive secretary; Jesse Goldman, Murray Goldwasser, A. Galfunt, Morris Ranno, Frank Kaiser, Robert Barry, committee chairmen.

A feature of the banquet was the presentation of an award to the outstanding representative of the plating industry in the New York area. This award was presented by John J. Forbath to Julian Nelken of Henry Nelken, Inc., for his many contributions to the progress not only of the Masters' Electro-Plating Association, but also of the job plating industry.

The M.E.P.A. was organized with 17 member firms in 1919 and has now grown to almost 100. It is associated with local job plating groups in other cities forming the national organization known as the National Association of Metal Finishers. Executive offi-

cers of the Masters' Electroplating Association, Inc., are located at 59 East 4th St., New York 3, New York.

Extensive research efforts to improve nickel plating in order to increase the protective value of nickel coatings and to reduce their cost has been reviewed by **Dr. W. A. Wesley, The International Nickel Company, Inc.,** in the Hothersall Memorial Lecture before the Institute of Metal Finishing at the Norbreck Hydro Hotel, Blackpool, England.

Dr. Wesley, manager of International Nickel's Research Laboratory at Bayonne, New Jersey, was awarded the 1955-56 Hothersall Memorial Medal by the Institute of Metal Finishing for his outstanding work in the electrodeposition field. In his lecture, "Of Nickel Atoms, Ions and Electrons," Dr. Wesley applied recent theories of the electronic structure of the transition elements to explain the mechanism of dissolution of nickel, with particular reference to the industrial practice of nickel-plating, a process of considerable commercial significance in the metal finishing industry.

NECROLOGY

Burton T. Sweely, formerly vice president in charge of Research, Chicago Vitreous Corporation, died recently in Chicago. Mr. Sweely retired in 1951.

★ ★ ★

Wilfred S. McKeon, president of **Sulphur Products Co.,** Greensburg, Pa., passed away recently after a long illness. Mr. McKeon was both a charter and honorary member of the Pittsburgh Branch, American Electroplaters' Society, and had been active in the affairs of the A.E.S. for many years.

He was one of the founders of the International Fellowship Club which more recently was incorporated as the Metal Finishing Suppliers' Association, Inc. The formation of this organization did much to improve relationships between suppliers and their customers.

AGATEEN

All you "GUYS and DOLLS" in the AES

are cordially invited to visit our Hospitality Headquarters at the Statler Hotel in Washington, D. C., during the Annual Convention of the American Electroplaters Society. Will greet you there in person.

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MEETINGS of INTEREST to FINISHERS

Jun. 4-6. 24th Annual Convention and Exhibit, Institute of Appliance Manufacturers, Netherland Plaza Hotel, Cincinnati, Ohio.

Jun. 17-21. 43rd Annual Convention, American Electroplaters' Society, Hotel Statler, Washington, D. C.

Jun. 17-22. Annual Meeting, American Society for Testing Materials, Chalfonte-Haddon Hotel, Atlantic City, N. J.

Sept. 16-22. Pacific Coast Meeting, American Society for Testing Materials, Statler Hotel, Los Angeles, Calif.

Oct. 21-24. 34th Annual Meeting and 21st Paint Industries Show, Federation of Paint and Varnish Production Clubs, Netherland Plaza Hotel, Cincinnati, Ohio.

Oct. 28-Nov. 1. Fall Meeting, Electrochemical Society, Inc., Hotel Statler, Cleveland, Ohio.

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PRODUCT LITERATURE

44. Heat Processing Equipment
Bulletin No. 560 describes units designed for many applications in heat processing. Brief outline serves as a guide to selecting heat processing equipment to do a specific job. The Lanly Co., 760 Prospect Ave., Cleveland 15, Ohio.

45. Treating Aluminum for Porcelain Enameling
Bulletin 1241A gives complete information about Alodizing aluminum prior to porcelain enameling, so as to eliminate pre-firing. American Chemical Paint Co., Ambler 14, Pa.

46. Plating Solution Filters
Solution filters designed specifically for plating solutions incorporate self-priming pump, integral back washing apparatus, stainless steel construction and portability. The Udylite Corporation, Detroit 11, Mich.

47. Rack Coating
Information on Coating 218X, which is baked on plating racks to give better chemical resistance and longer wearing characteristics. Metal & Thermit Corp., Rahway, N. J.

48. Automatic Plating Machine
Operational details and complete technical information on automatic plating. Wagner Bros., Inc., 432 Midland Ave., Detroit 3, Mich.

49. Selenium Rectifiers
Details on selenium rectifiers for producing direct current used in plating, electrocleaning, electropolishing and anodizing. Walker Div., Norma-Hoffmann Bearings Corp., Stamford, Conn.

50. Material Handling Pumps
Binks material handling pumps force buffing compound under pressure direct from the drum to supply automatic compound sprayers. Complete details are given in Bulletin 703. Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12.

51. Sanding Machines
Folder gives details on air and electrically driven sanders with either orbital or straight line action. General information on care and operation of this type of sander. National Air Sander, Inc., 2818 Auburn St., Rockford, Ill.

52. Burnishing Shapes
Catalog on Abbott burnishing shapes: ball, ovaball, cone, diagonal and pin. Applications for each are described. The Abbott Ball Co., 1064 New Britain Ave., Hartford 10, Conn.

53. Abrasive Belt Swing Grinder
Bulletin 77 illustrates and describes the Universal Abrasive Belt Grinder, a versatile polishing tool. Abrasive Machinery Corp., 432 S. Pennsylvania St., Indianapolis 25, Indiana.

54. Corrosion Protection
Improving corrosion protection with Iridite coatings. Allied Research Products, Inc., 4004-06 Monument St., Baltimore 5, Maryland.

55. Automated Barrel Finishing
Information on automatic, multiple station submerged-type barrel finishing machines. Includes data on automatic programming and flow diagrams of typical layouts. Almco Div., Queen Stove Works, Inc., 83 Marshall St., Albert Lea, Minn.

56. Mixers
Catalog shows various types and sizes of mixers for fluid mixing operations. Includes description of portable mixers. Alsop Engineering Corp., 1105 Keen St., Millidale, Conn.

57. Better Electroplating
Booklet entitled "Improving Your Electroplating Operation" gives helpful hints that can be used to solve problems frequently encountered by platers. The American Metal Co., Ltd., 61 Broadway, New York, N. Y.

58. Electrostatic Finishing
Case history file shows typical industrial finishing jobs that are being handled efficiently with the Ashdee Electrostatic paint finishing system. Ashdee Electrostatic Products, Inc., 18032 Dixie Hwy., Homewood, Ill.

59. Greaseless Compounds
Technical data on Atlantic greaseless compounds for buffing and polishing. The Atlantic Compound Co., 1860 Baldwin St., Waterbury, Conn.

60. Bias Buffs
Literature describes the advantages of using Bias Buffs on automatic polishing machines. Bias Buff & Wheel Co., Div. of Riegel Textile Corp., 3464-3466 Hudson Blvd., Jersey City 7, N. J.

61. Paint Stripping Service
Details of company's facilities for stripping paint on a job basis. Redi-Strip Co., 10811 S. Garfield Ave., South Gate, Calif.

62. Airless Spray Painting
Full information on the apparatus needed for application of paint by the Airless Spray process. Bede Products Corp., Jackson St., Dept. 1, Amherst, Ohio.

63. Oscillating Plating Cylinder
Literature tells how the Belke Double Oscillating Plating Cylinder increases efficiency and improves quality of barrel plating. Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Ill.

64. Silver Anodes
Specially shaped anodes for more efficient silver plating under specific conditions. American Platinum Works, 231 New Jersey Railroad Ave., Newark 5, New Jersey.

65. Ovens
Bulletins available on electric, gas, oil or steam heated ovens designed to use recirculation heating. W. S. Rockwell Co., 2906 Eliot St., Fairfield, Conn.

66. Parts Washers
Complete line of metal parts washers and surface treatment machines. G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Ill.

67. Automatic Polishing Machines
Literature on automatic and semi-automatic polishing and buffing machines. Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20, (Ferndale), Mich.

68. Viscosity Determination and Control
Data Sheet 091-B lists reprints of technical papers on viscosity and related subjects, available on request. Brookfield Engineering Laboratories, Inc., Stoughton 11, Mass.

69. Phosphate Coating
Literature on Paintbond, a zinc phosphate coating which seals metal surfaces from moisture, retards corrosion if the paint finish is scratched, and limits rust to the immediate area affected by a deep scratch. Detrex Corporation, Box 501, Detroit 32, Mich.

70. Plastisols
Booklet tells how Chem plastisols and primer systems can be used to protect racks and tanks from corrosive plating solutions. Chem Products, Inc., Rocky Hill 10, Conn.

71. Quartz Ovens
Clepco Quartz Heaters are designed to emit that part of the spectrum most readily absorbed by paints. Complete information on different types and sizes, typical applications. The Cleveland Process Co., 1965 E. 57th St., Cleveland 3, Ohio.

72. Hammer Finishes
Clinco Hammer Finishes, their advantages and typical applications. The Clinton Co., 1210 Elston Ave., Chicago 22, Ill.

73. Spray Decorating Machine
Brochure describes automatic oscillating gun pressure contact painting machine. Illustrations and complete description of machine for single color decorating of small and medium size parts. Paints flat, convex or concave shaped parts. Conforming Matrix Corporation, 356 Factories Building, Toledo 2, Ohio.

74. Improve Paint Adhesion
Kenvert Chrome Sealer Films help to eliminate the reaction of paints with nonferrous metals. Conversion Chemical Corp., 102 E. Main St., Rockville, Conn.

75. Production Digest Bulletin
Contains 60 pages of information on coated abrasive grinding and polishing techniques. Behr-Manning, Dept. PF-6, Troy, N. Y.

76. Barrel Plating Equipment
Catalog shows a complete line of standard and custom-built barrel plating equipment. Daniels Plating Barrel & Supply Co., 129 Oliver St., Newark 2, N. J.

77. Immersion Heaters
Bulletin 355 explains the advantages of Dean Thermo-Panel Coils and contains data on subjects related to immersion heating, such as capacity tables, wall and surface losses, weights, conversion tables, and calculation of delta T. Thermo-Panel Div., Dean Products, Inc., 616 Franklin Ave., Brooklyn 38, N. Y.

78. Tack Cloth
Specially impregnated cloths designed to remove all dust and loose dirt from metal surfaces prior to paint finishing. Detro Sales Co., Inc., Culver City, Calif.

79. Portable Paint Heater
A complete hot spray unit mounted on wheels like a golf cart allows paint application by the hot spray method anywhere in the plant. The DeVilbiss Co., Toledo 1, Ohio.

80. Cleaning Compound
Information on the advantages of using Diversey 519 for cleaning metals. The Diversey Corp., 1820 Roscoe St., Chicago.

81. Buffing Machine
Construction details, photographs and specifications of the Harper Uniflex Buffing Machine. Harper Buffing Machine Co., 5 N. Main St., East Hampton, Conn.

82. Silicone Based Paints
Bulletin discusses advantages of silicone paints in industrial finishing. Paints with unusual characteristics and for special applications can be formulated with this material, especially in cases where heat resistance is important. Dow Corning Corp., Dept. 5006, Midland, Mich.

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83. Electropolishing Copper
Folder describes Electro-Glo 200 process for electropolishing copper and copper alloys. Electro-Glo Co., 1430 S. Talman Ave., Chicago 8, Ill.

84. Black Oxide Finishes
Information on Ebonol oxide finishes for steel, copper, brass and zinc. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

85. Compound Selection Chart
Chart shows the proper compound to use for various barrel finishing operations on a variety of metals. Esbec Barrel Finishing Corp., 19 Beech St., Byram, Conn.

86. Longer Wearing Fixtures
Description of facilities for coating buffing fixtures with tungsten carbide to give better abrasion resistance, make them last longer. Fusion Metal Coating Co., 25493 W. 8 Mile Rd., Detroit 19, Mich.

87. Germanium Rectifiers
Literature points out the advantageous features of General Electric Air-cooled Germanium Rectifiers for electroplating. General Electric Co., Dept. 463-14E, Schenectady 5, N. Y.

88. Buffers, Polishers
Specifications and technical information on Hisey buffing and polishing machines. Catalog 72 PY. The Hisey-Wolf Machine Co., Div. of Cincinnati Electrical Tool Co., Cincinnati 8, Ohio.

89. Easier Spray Booth Maintenance
Information on products that make it easier to keep spray booths free of overspray. Hygrade Food Products Corp., Industrial Div., 18 Stetson St., Buffalo 6, N. Y.

90. Cold Cleaner
Data on International-504, a blend of solvents, detergents and wetting agents for use in washing machines to quickly remove dirt and grease from metals. International Chemical Co., 2628 N. Mascher St., Philadelphia 33, Pa.

91. Parlon Finishes
Information on the advantages of Parlon-Synthetic coatings. Hercules Powder Co., 927 Market St., Wilmington 99, Del.

92. Rustproofing
Details of Metabond amorphous type coating for corrosion protection of zinc. International Rustproof Corp., 12507 Plover Ave., Cleveland 7, Ohio.

93. Brass Additive
Literature discusses Jelco Brass Additive, formulated to produce an improved brass plate. Jelco Finishing Equipment Corp., 153 E. 26th St., New York 10, N. Y.

94. Portable Sandblast Gun
Bulletin illustrates and describes the Lindberg Portable Sandblast Gun, a handy tool to have in any metal finishing shop. Lindberg Products Co., P.O. Box 121P, Kelseyville, Calif.

95. Nickel Activator
Chrometex Nickel Activator improves finishing by activating passive nickel prior to chromium plating. Data sheet gives complete technical information on its applications and the results to be expected. MacDermid, Inc., Waterbury 20, Conn.

96. Automatic Cleaning Machine
Bulletin 10,000G, a manual on cleaning materials, methods and machines includes information on an automatic dip-immersion-agitating cleaning machine for use in completely automatic finishing procedures. Industrial Cleaning Div., Magnus Chemical Co., Inc., 208 South Ave., Garwood, N. J.

97. Tumbling Barrels
Catalog describes and illustrates complete line of barrel finishing machines and accessories. These barrel finishers are designed so that they can be loaded, unloaded and inspected for proper action on the parts being tumbled while running. The Henderson Bros. Co., 134 S. Leonard St., Waterbury, Conn.

98. Rheostats
Bulletin on the new H-VW-M universal carbon pile tank rheostats for electroplating. Hanson-Van Winkle-Munning Company, Church St., Matawan, N. J.

99. Complete Finishing Systems
Catalog A-656 describes economies possible through the installation of a completely integrated finishing system for the application of paint, varnish, lacquer and enamel. The R. C. Mahon Co., Detroit 34, Mich.

100. Coating Resins
Information on the specific properties that can be obtained in films formed from various Exon resins. Chemical Sales Div., Firestone Plastics Co., Dept. 644H, Pottstown, Pa.

101. Degreasers
Folder contains information on a wide variety of degreasers: laboratory, two-dip, three-dip, vapor spray, barrel type, automatic, semi-automatic, and specials. Mechanical Process Co., Inc., 392 Valley St., South Orange, N. J.

102. Weld Grinding and Blending
Booklet describes techniques for grinding and blending welds to produce a better finish. Minnesota Mining & Mfg. Co., Dept. FH-66, St. Paul 6, Minn.

103. Silk Screen Materials
Catalog contains description of screen and ink materials used in finishing by the silk screen process, which is used in applying decorations to TV sets, dials, ash trays, name plates, toys, and other items where a design must be applied. The Naz-Dar Co., Dept. P6, 461 Milwaukee Ave., Chicago 10, Ill.

104. Automatic Polishing Machines
A complete line of automatic machines for polishing, buffing and deburring. The Packer Machine Co., Meriden, Conn.

105. Vapor Degreaser
Specifications and operating characteristics of the Phillips 100 CS vapor degreaser. Phillips Manufacturing Co., 3457 W. Touhy Ave., Chicago 45, Ill.

106. Heat Exchangers
Using Platecoils saves space in heating or cooling solutions. Platecoil Div., Tranter Mfg. inc., Lansing 4, Mich.

107. Dip and Flow Coat Finishing
Technical bulletins on dip tank and flowcoat finishing. Processes are described, and advantages and disadvantages of the two finishing techniques are discussed. Size and shape of dip tanks, methods of dipping, hanging of the ware, methods of agitation, tank control, as well as general suggestions and precautions are treated in the dip tank bulletin. The flowcoat brochure includes sections on limitations of flowcoating, operating variables, surface preparation, primers, topcoats, and thinners. E. I. duPont de Nemours & Co., Finishes Div., Room 7145-D, Wilmington 98, Del.

108. Water Supply Temperature Control
Bulletin 362 gives complete information on the Type N Hydroguard, which automatically proportions the supply of hot and cold water to maintain a controlled temperature water supply. The Powers Regulator Co., Skokie, Ill.

109. Improved Galvanizing
Folder tells how the use of Promat PreGalv in rinsing after pickling can result in the production of improved galvanized finishes. Promat Div., Poor & Co., 851 S. Market St., Dept. PF-6, Waukegan, Ill.

110. Electrostatic Painting
Brochure on electrostatic spray painting explains "What and How" of the Ransburg No. 2 Process. Production line examples show a variety of applications of the No. 2 Process in the finishing of industrial products ranging in size from automobile chassis and refrigerator cabinets to toy automobiles and door knobs. Ransburg Electro-Coating Corp., Indianapolis 7, Indiana.

111. Spray Booths
Bulletin gives information on advantages of Newcomb-Detroit spray booths. Newcomb-Detroit Co., Inc., 5761 Russell St., Detroit 11, Michigan.

112. Nickelite
Advantages of using Nickelite in barrel bright nickel plating. Make-up formulae are included. Platers Research Corp., 59 E. 4th St., New York 3, N. Y.

113. Anodes
Technical data on anodes. Copper, brass, bronze, zinc and nickel. The Seymour Manufacturing Co., Seymour, Conn.

114. Lacquer Solvent
Technical bulletins describe advantages of using ethyl amyl ketone for reducing lacquers and lacquer formulation. Shell Chemical Corp., Chemical Sales Div., 380 Madison Ave., New York 17, N. Y.

115. Hot Spray
Literature on the Circaflo Special, which permits clean-out and color changes in less than a minute. Spee-Flo Co., Dept. PF9, 720 Polk, Houston, Texas.

116. Buffs
Bulletin No. B-103 covering the full range of H-VW-M buffs. Describes three different types of buffs used in cutting down and coloring: pieced buffs, for lighter work; full-disc buffs, for medium to light duty; and Ruff-L-Buffs, for heavy duty. Advantages of binderized buffs are shown in photos. Hanson-Van Winkle Munning Company, Church St., Matawan, New Jersey.

117. Aluminum Finish
Bulletin No. 501 describes Lumiwite, a product used for finishing aluminum. Also lists blackening compounds and brazing fluxes. Standard Research, Inc., 464 Grand Ave., New Haven, Conn.

118. Barrel Finishing Machine
Data sheet describes Mastercraft Barrel Finishing Machine, which features a built-in unloading chute and is available with single or variable speed drives. Mido Products, Inc., 1801 Border Ave., Torrance, Calif.

119. Spray Booth Coatings
Details on "Liquid Envelope" strippable spray booth coatings for easily removing overspray from spray booth walls. Better Finishes & Coatings, Inc., 263 Doremus Ave., Newark 5, N. J.

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120. Sprayable Coatings
Bulletin tells how metals and painted surfaces may be protected in processing and transit by a plastic coating that is stripped when the product is ready to use. Spraylat Corp., One Park Ave., New York 1, N. Y.

121. Push Button Painting
Folder gives details on touch-up with self-contained aerosol paints. Sprayon Products, Inc., 2075 E. 65th St., Cleveland 3, Ohio.

122. Metal Preparation
Literature on Econocote, a material that can be used to clean, etch and phosphatize metal in one operation. Metasurf Corp., 12830 Eaton Ave., Detroit 27, Mich.

123. Electric Heaters for Electroplating
Bulletin No. 750 illustrates and describes a variety of heaters useful in heating, plating, pickling and washing solutions. Edwin L. Wiegand Co., 7522 Thomas Blvd,. Pittsburgh 8, Pa.

124. Electrostatic Spray Equipment
Complete information on the "Ionic" Electrostatic Spray system of applying paint automatically. Scientific Electric, 105-119 Monroe St., Garfield, N. J.

125. Pearl-Like Finish
Nacromer, when applied in a clear vehicle over standard finishes, produces an iridescent, pearl-like finish. Mearl Corp., 151 Waverly Place, New York 14, N. Y.

126. Blast Cleaning Apparatus
Diagrams and photographs are used to illustrate operational features of the Pangborn Type EN-2 Blast Cleaning Cabinet in Bulletin 602A. Pangborn Corp., 5000 Pangborn Blvd., Hagerstown, Maryland.

127. Buffs
Literature describes custom-designing service which designs buffs to fit all types of service requirements. Williamsville Buff Div., Bullard Clark Co., Danielson, Conn.

128. Bright Copper
Information on the Smoothex Bright Copper Process. Smoothex, Inc., 10705 Briggs Rd., Cleveland 11, Ohio.

129. Distilled Water Heater
Bulletin No. 132 gives complete information on equipment for heating distilled water automatically. Adjustable thermostat keeps the distilled water at any desired temperature. Barnstead Still & Sterilizer Co., 12 Lanesville Terrace, Forest Hills, Boston 31, Mass.

130. Plating Test Equipment
Booklet contains description of a variety of instruments for controlling plating solutions. R. O. Hull & Co., Inc., 1304 Parsons Ct., Rocky River 16, Ohio.

131. Dispersed Colors
"Dispersed Colors for the Paint Industry for 1956," a technical bulletin listing the dispersed color standards especially designed for use in the paint industry. The use of flushed colored is accepted by the paint, lacquer, and enamel manufacturer as an improvement over dry grinding of pigments. A time saver in filling orders, dispersed colors enable manufacturers to increase production without the purchase of additional equipment. Color particles in dispersed colors are more completely wetted by the vehicle, the resulting paints and enamels are of better uniformity, minimum flooding, less silking, less blooming, maximum gloss, higher tinting strength for the same amount of pigment used. Technical Bulletin No. C-61. Pigment, Color and Chemical Division of The Sherwin-Williams Co., 260 Madison Ave., New York 16, N. Y.

132. Filter Media
Advantages of using nylon and Dacron filter felts for solution clarification and filtering. Brosites Products Corp., 50 Church St., New York 7, N. Y.

133. Buffing Compounds
A series of technical data sheets explaining basic variations in polishing and buffing compounds. Data sheet No. 561 refers to different grades of polishing greasestick compounds. Abrasive belt lubricants are described in sheet No. 562. McAleer Manufacturing Corp., 101 S. Waterman, Detroit 17, Mich.

134. Heat-Resistant Finishes
Literature shows typical applications in which Sicon heat resistant finishes have solved finishing problems where heat resistance is important. Midland Industrial Finishes Co., Dept. F-6, Waukegan, Ill.

135. Silver Lacquer
Details on 2105 Silver Lacquer, which is specially formulated to protect silver. G. J. Nikolas & Co., Inc., 2880 Washington Blvd., Bellwood, Ill.

136. Organic Solvents
A handbook on organic solvents. Properties such as flash point, toxicity, dry time, solvent power are explained. Comparison tables, testing methods and applications for organic solvents. Solvents & Chemicals Group, 2540 W. Flournoy St., Chicago 12, Ill.

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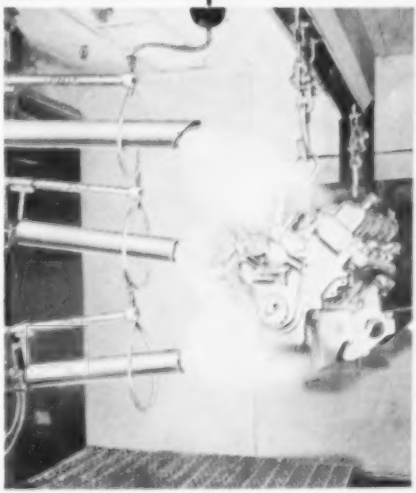

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